



GLISSON
RICKETS

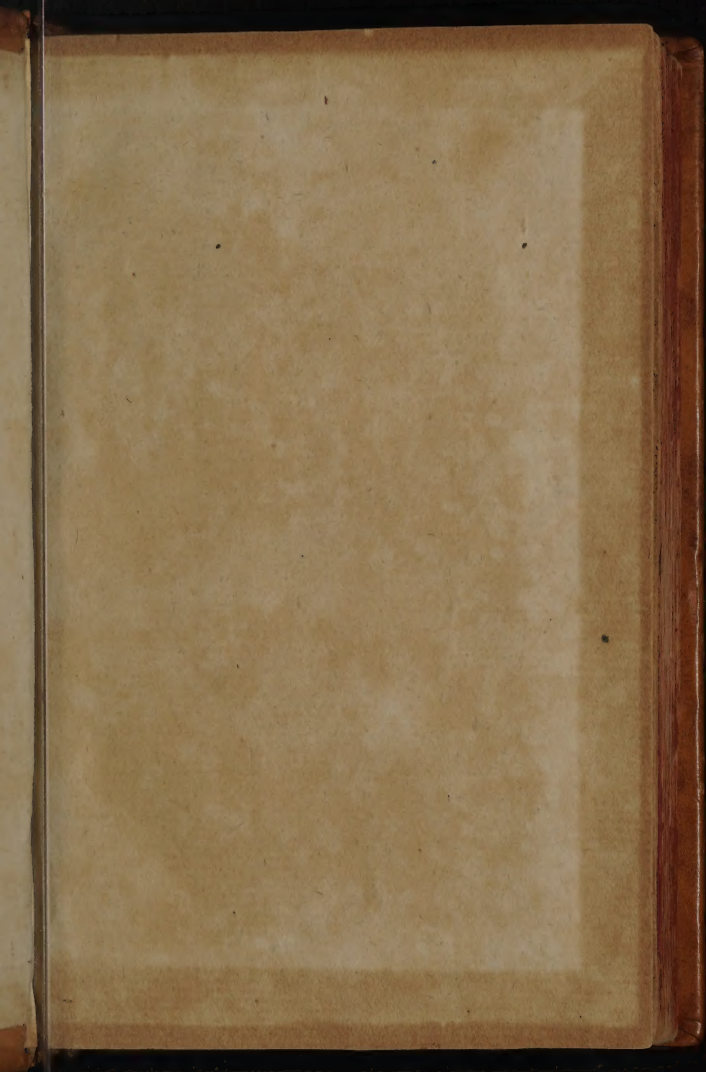
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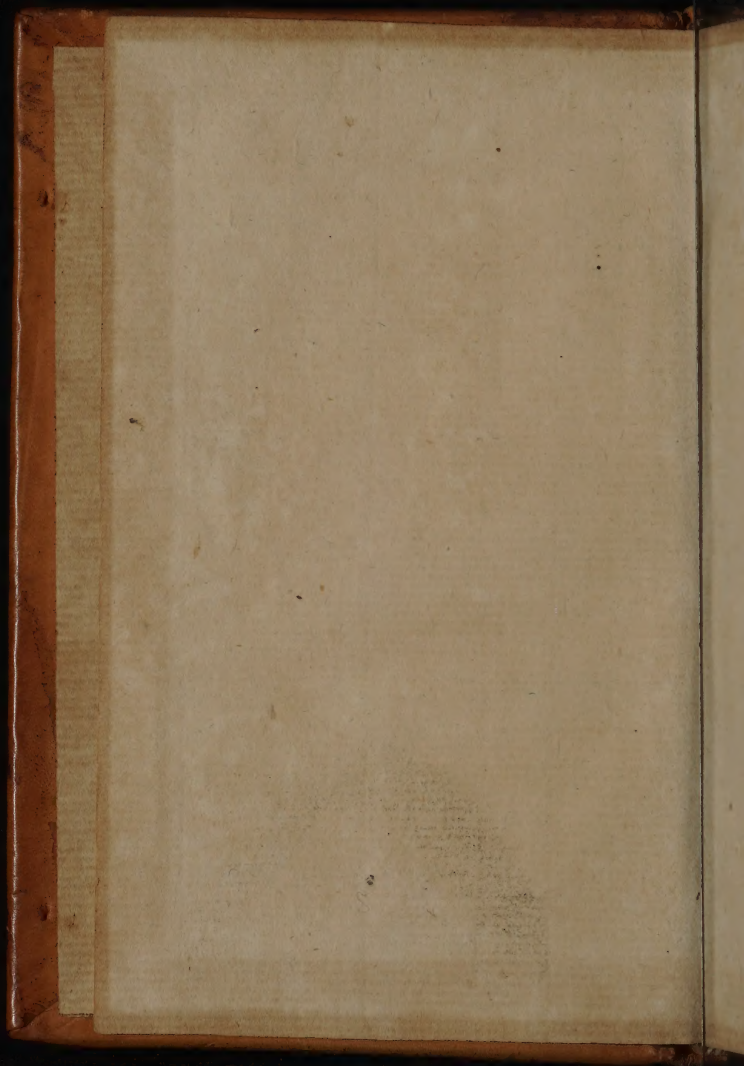


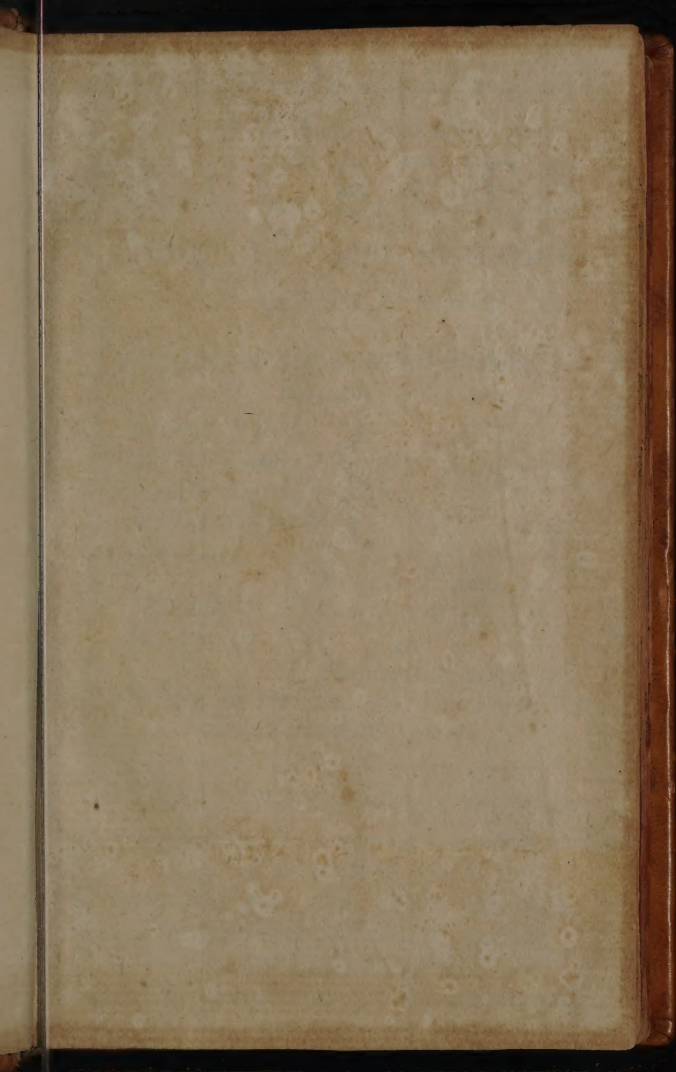


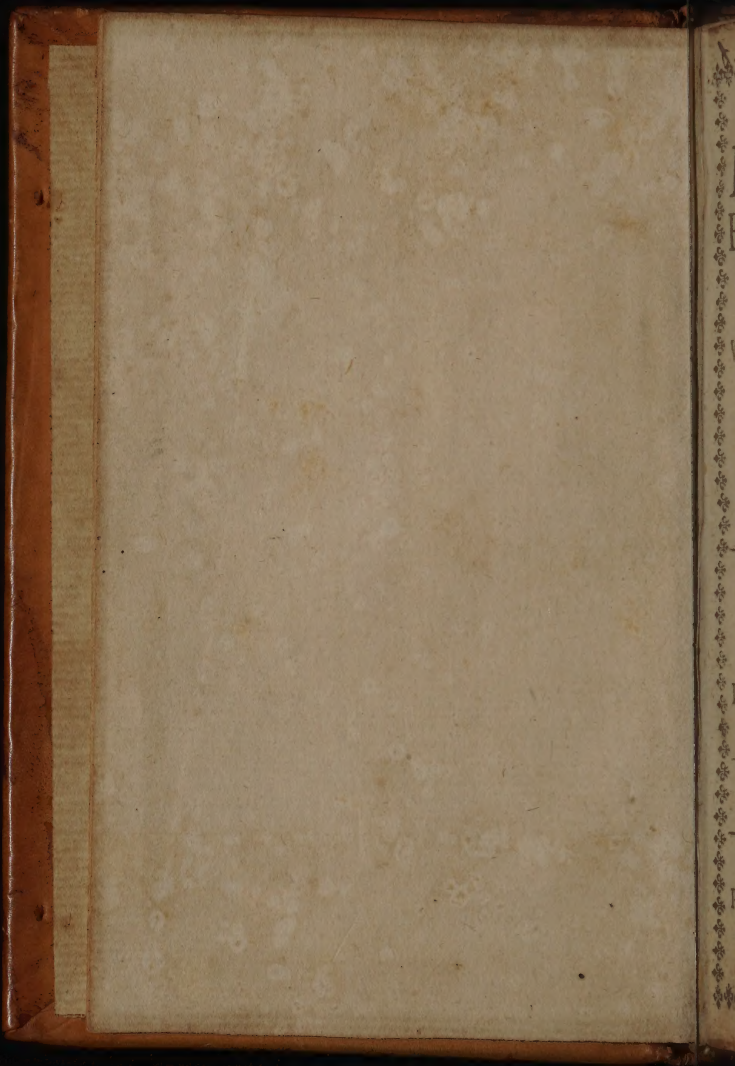


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A Treatise of the
RICKETS:
Being a Disease common
to CHILDREN.

Wherein (among many other things) is
shewed,

- | | |
|------------------------|-------------------|
| 1. <i>The Essence</i> | } of the Disease. |
| 2. <i>The Causes</i> | |
| 3. <i>The Signs</i> | |
| 4. <i>The Remedies</i> | |

Published in Latin by	{	<i>Francis Glisson,</i>
		<i>George Bate,</i>
		And <i>Ahasuerus Regemorter;</i>

Doctors in Physick, and Fellows of the
Colledge of Physicians at London.

Translated into English by *Phil. Armin.*

L O N D O N :

Printed by *Peter Cole*, at the sign of the
Printing-Press, in Cornhil, near the
Royal Exchange. 1651.

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The Preface to the Reader.

Courteous Reader :

BEfore the space of five years, we have mutually communicated by written Papers something concerning this Affect in privat meetings (which some of us Physitians use sometimes to have for Exercise-sake in the works of Art) when theſe things had opened a way in ſome ſort to the deeper enquiry and ſearch after the condition and cure of this Diſeaſ; we thought it might prove a very ſucceſſful undertaking to recal thoſe Papers once again to a Review; and (thoſe things being called out which might be beſt accommodated to this uſe) to prepare a perfect Tractate of this Diſeaſ. That Care by common ſuffrage was entrusted to D^r Gliffon, D^r Bate, and D^r Regemorter, who purpoſed at firſt to divide this buſineſſ among themſelves according to the parts of the future Tractate, and to aſſign to each one his proper taſk. But when D^r Gliffon in the judgment of the reſt had accurately interweaved his part (which comprehended the finding out of the Eſſence of this Diſeaſ) and in that had propounded many things different from the common Opinion of Phyſitians (though perhaps the leſſ different from the truth) we altered our Reſolution, and committed the firſt Stuff of the whol work to be wo-

The Preface to the Reader.

ven by him alone, lest at length the parts should arise deformed, misshapen and heterogeneous to themselves. He accepted the offer, but with this condition, that whilst he was employed in beautifying and adorning this part, the other two should often hold consultation with him, and confer unto the wouf their Covenanants of free commerce by their own observations concerning this Affect, and that those things which should be delineated and shaped by his labor and study, should presently undergo the examination and judgment of the rest, as if they had been fashioned by their hands. And so at the length we have brought this Work (such as it is) to perfection, and have offered it to the publick view, being by no means moved therunto by an itch of writing (which is the Epidemical ill custom of this age) but by this Consideration only, That because we are not born for our selves, we might make these (such as they are) common, which in som measure may advance the health of Infancy and tender age (in which for the present a great part of Mankind, but for the future all Mankind is comprehended) and likewise propagate an Encreas unto Learning: with this hope also, That by this Example we may invite the Wits of other most learned men to make inquisition into the Essences of Diseases and their Causes, and to examin these our Labors that posterity may enjoy them yet more perfect. But the obscure Essence of this Disease, and this our daring to tread in unbeaten paths (were we silent) might obtain a pardon, and modestly chalenge a candid interpretation for all defects, lapses, and errors in these our Endeavors. Finally, expect no flashes of Rhetorick and Courtly-Langage;

Nobis non licet esse tam dicertis,
Musas qui colimus severiores.

And

The Preface to the Reader.

*And indeed the condition of the matter forbids all such
Painting; in such a manner,*

Ornari res ipsa negat, contenta doceri.

*Farewel (kind Reader) and peruse them as we dedicate
them, that is, with an ingenious and candid mind.*

F. G.

G. B.

A. R.

*The Names of those Doctors who by written Papers
contributed their Observations to our first Exercise upon
this Affect.*

D^r Francis Glisson.

D^r T. Sheafe.

D^r G. Bate.

D^r A. Regemorter.

D^r R. Wright, *dead.*

D^r N. Paget.

D^r J. Goddard.

D^r E. Trench.

Fellows of the Colledg of Physitians at London.



The

*The Names of several Books printed
by Peter Cole, at the sign of the Printing-
Press in Cornhil, by the Exchange,
L O N D O N.*

*Three several Books, by Nich. Culpeper, Gent. Student
in Physick and Astrology.*

1 **A PHYSICAL DIRECTORY:** Or a Translation of the *Dispensatory*, made by the Colledg of Physitians of London. Whereunto is added, The Key to Galen's *Method of Physick*.

2 **A DIRECTORY** for *Midwives*; or a Guide for Women.

3 **AN EPHEMERIS** for the year 1651. Amplified with Rational *Predictions* from the Book of the Creatures. 1 Of the State of the Year. 2 What may probably be the effects of the Conjunction of *Saturn* and *Mars*, July 9. 1650. in *Scotland*, *Holland*, *Zealand*, *York*, *Amsterdam*, &c. and about what time they may probably happen. To which is joyned, An *Astrological-Physical Discours* of the *Humane Vertues* in the Body of Man.

A Godly and Fruitful Exposition, on the first Epistle of *Peter*. By Mr. *John Rogers*, Minister of the Word of God at *Dedham* in *Essex*.

An Exposition on the Gospel of the Evangelist *St. Matthew*. By Mr. *Ward*.

Seven Books of Mr. Jeremiah Burroughs lately published; As also the Texts of Scripture upon which they are grounded.

- 1 The Rare Jewel of *Christian Contentment*, on *Phil.* 4. 11. Wherin is shewed, 1. What *Contentment* is, 2. It is an holy Art and Myſtery, 3. The Excellencies of it, 4. The Evil of the contrary ſin of *Murmuring*, and the Aggravations of it.
- 2 *Gospel-worship*, on *Levit.* 10. 3. Wherin is ſhewed, 1. The right manner of the *Worship* of God in general; and particularly, In *Hearing the Word*, *Receiving the Lords Supper*, and *Prayer*.
- 3 *Gospel-Converſation*, on *Phil.* 1. 17. Wherin is ſhewed, 1. That the *Converſations* of Beleevers muſt be above what could be by the *Light of Nature*, 2 Beyond thoſe that lived under the *Law*, 3. And ſutable to what *Truths* the *Gospel* holds forth. To which is added, *The Miſery of thoſe Men that have their Portion in this Life only*, on *Pſal.* 3. 20.
- 4 A *Treatiſe of Earthly-mindedneſſ*. Wherin is ſhewed, 1 What *Earthly-mindedneſſ* is, 2 The great Evil therof, on *Phil.* 3. part of the 19. Verſ. Alſo to the ſame Book is joyned, A *Treatiſe of Heavenly-mindedneſſ*, and *walking with God*, on *Gen.* 5. 24. and on *Phil.* 3. 20.
- 5 An *Expoſition*, on the fourth, fifth, ſixth, and ſeventh Chapters of the *Prophesie of Hoſea*.
- 6 An *Expoſition* on the eighth, ninth, and tenth Chapters of *Hoſea*.
- 7 An *Expoſition* on the eleventh, twelfth, and thirteenth Chapters of *Hoſea*.

*Twelve several Books of Mr. William Bridge, collected
into one Volum. Viz.*

- 1 The great Gospel-Mystery of the Saints Comfort and Holiness, opened and applied from Christs Priestly-Office.
- 2 Satans Power to Tempt; and Christs Love to, and Care of his People undar Temptation.
- 3 Thankfulness required in every condition.
- 4 Grace for Grace; or, The Overflowings of Christs Fulness received by all Saints.
- 5 The Spiritual Actings of Faith, through Natural Impossibilities.
- 6 Evangelical Repentance.
- 7 The Spiritual-Life, and In-Being of Christ in all Beleevers.
- 8 The Woman of Canaan.
9. A Vindication of Ordinances.
- 10 Grace and Love beyond Gifts.
- 11 The Saints Hiding-place in time of Gods Anger.
- 12 Christs Coming is at our Midnight.

Six Sermons, Preached by Dr. Hill, collected into one Volum.

Dr Sibbs on the Philippians.

The Best and Worst Magistrate, by Obadiah Sedgwick.

The Craft and Cruelty of the Churches Adversaries, by Matthew Newcomin.

A sacred Panygrick, by Stephen Marshal.

Barriffs Military Discipline.

Dr Ponnet's Treatise of Politick Power.

The Immortality of Mans Soul.

The Anatomist Anamized.

cum multis aliis—



A Treatise of the RICKETS.

CHAP. I.

The Antiquity and first Origine of this Disease, the Name of it, and the Derivation of the Name.



THAT some new Diseases altogether unknown to the Ancients, have, for some Ages lately past invaded divers parts of Europe, is a known & undoubted truth (whether we attribute it to the vicissitude of things, or impute it to the Sins and Impieties of men, and their corrupt manners) as the French-pox, the Scurvy, the * Plica, and the like; in which number this very affect we are now about to handle may be justly Registred. For if we examine all the diseases of Infants & children described either by the Ancients or Modern Writers in their Books of the Diseases of Infants; we shall meet with none which with a sufficient

** A most loathsome and horrible Disease in the Hair, unheard of in former times, bred by modern luxury and excess: It seizeth specially upon Women; and by reason of a viscid venomous humour, glues together (as it were) the hair*

hair of the head with a prodigious ugly folding & entanglement: sometimes taking the form of a great Snake, sometimes of many little serpents: full of nastiness, vermine, and noysome smel: And that which is most to be admired, and never eye saw before, pricked with a needle, they yeeld bloody drops. And at the first spreading of this dreadful Disease in Poland, all that cut off this horrible and snakie hair, lost their eyes, or the humor falling down upon other parts of the body, tortured them extremely. It began first, not many years ago, in Poland: It is now entered into many parts of Germany H. Saxo. Professor of Physick in Padua.

exactness doth delineate the condition and Idea of this evil. For although it may seem to hold a correspondence, or to have some affinity with a chronical Feaver, a Consumption, the extenuation or leanness of Infants, and

† A Dis- the † Hydro-
ease in the cephalos; yet
head, coming frō to speak truth
Rheum. it is an affect
evidently different from
them in the Species. For
you may observe many
to be vehemently afflicted with this Malady without any Feaverish-distemper, or any cause of such suspicion: in like manner although a Consumption doth frequently supervene upon this Disease before the dissolution of the Patient, yet is it seldome seen to accompany the first invasion thereof, as for the meagerness or leanness, although some parts are perpetually observed in this

this affect to be made lean, yet this doth not happen in all alike, as in a right and true leanness, but you may perceive the parts about the head and face to be in a thriving condition as to outward appearance, and well complexioned, even to the last day of life. Finally, The Hydrocephalus is very frequently complicated with this affect, yet we have dissected some whose Brain hath been sufficiently firme, and not over-moistened with this superfluous humour. Some have conjectured that this Disease is an imp or fruit of the French-pox or Scurvy, descending from the viciated Bodies of the Parents upon the Children: For we deny not but the Puerous Pox, may propagate and bring forth an Issue, not only affected with that Pox & Scurvy, but likewise infected with this evil, and this even hath also fallen under Observation: yet for the most part this Disease in the propriety of its Essence, hath neither affinity nor familiarity with those affects, and besides it requireth a different progress of cure; we have sometimes likewise observed a strumatal and swelling Malady to be complicated with this; but we have also many times beheld this to be well distinguished from that, and that from this.

But why do we dwell so long upon this inquisition? seeing that he, who wil accurately contemplate the signs of this affect, as in their due places they shal be propounded, may most easily persuade himself, That this is absolutely a new Disease, and never described by any of the Ancient or Modern Writers in their practical Books which are extant at this day, of the Diseases of Infants.

But this Disease became first known (as neer as

we could gather from the Relation of others after a sedulous enquiry) about thirty years since, in the Counties of *Dorset* and *Somerset*, lying in the western part of *England*; since which time the observation of it hath been derived unto other places, as *London*, *Oxford*, *Cambridge*, and almost all the Southern and Western parts of the Kingdom: in the Northern Counties this affect is very rarely seen, and scarcely yet made known among the Vulgar sort of people.

The most received and ordinary Name of this Disease is, **THE RICKETS**: But who baptiz'd it, and upon what occasion, or for what reason, or whether by chance or advice it was so named, is very uncertain.

However it obtained that Name, yet in so great a variety of places through which it hath ranged, it hath not to this day been known by any other Denomination.

But it is an accident well worth our admiration, That this Disease being new, and not long ago nameless, at least not known by this Name, neither spreading so much in remote as in adjacent places, yet no man hitherto could be found out, who knew, or could shew, either the first Author of the Name, or the Patient to whom the appellation of the Disease was first accommodated, or the peculiar place where it was don, or the manner how it cam to be dispersed among the common people: for the inhabitants having gotten a Name for the Disease, receive it with acquiescence as a thing done with diligence and deliberation, and are not at all further solicitous either about the Name, or the Author of the Name.

But

But because they which are expert in the Greek & Latin tongues, may peradventure expect a Name from us, wherof some kind of Reason may be given, we have made fit together divers Names to this Disease, yet we conceive it somewhat unnecessary to make a particular rehearsal of them in this place: Nevertheless it may perhaps be proper and profitable to commemorate the Rules which we propounded to our selves in the designation of the Name: The First therefore was, That the Name should comprehend some notable condition of the Disease. The Second was, That it should be sufficiently distinct from the Names of other Diseases and Symptoms. The Third was, That it should be sufficiently familiar, easie of pronounciation, accommodated to the Memory, of no undecent length, and not studiously, and laboriously compounded.

Whilest we bend our employments to the satisfaction of these Rules, One of us by chance fell upon a Name which was complacenceous to himself, and afterwards pleasing to the rest; now this was *νόσος ῥαχίτις* or indeed *ῥαχίτις* (for that termination is not altogether abhorrent from the common Gender) the Spinal Disease, also *νόσος τῆς ῥαχέως*, the disease of the Spine of the Back: For the Spine of the Back, is the first and principal among the parts affected in this evil. Then no other Malady or Symptom did by the prerogative of time vindicate this appellation from it; besides the Name is familiar and easie. And finally, The English Name *Rickets*, receaved with so great a consent of the people, doth by this Name seem to be excused, yea, justified from Barbarism, For without any

wracking or convulsion of the word, the name *Rickets* may be readily deduced from the Greek word *Rachitis*, or *Rachites*; provided, That we will but allow that consideration of change, which in vulgar pronounciation usually happeneth to words transplanted from one Language to another.

Object. You will say, That they which imposed first the English name *Rickets*, were peradventure altogether unskilful in, and ignorant of the Greek tongue, or that they never thought of the Greek word *Rachites*, at least understood not that the Spine of the Back was the principal among those parts which were first affected in this Disease?

Answer. We Answer, It concerns not us whether they were ignorant of, or thought not upon the Greek word, or whether they did not understand the principal part that was first affected; yet are these things freely asserted. For we knew many at that time when the Disease did first spring up, and the Name was imposed, indeed learned men and skilful in the Greek tongue, to have their Residence in those places, to whom it was not perhaps any difficulty to observe that conspicuous debility of the Spine in this affect, and thereupon they might assign this Name unto it; although tis very possible, yea probable, That the common people by the error of pronounciation might somewhat pervert the Name so given, and expresse it, as to this day they retain it by the word *Rickets*. But whether it were, or were not so, we are not at all solicitous. If the matter were so, the imposed Name will (as is manifest) be altogether congruous, and perhaps also at the last will most fitly correspond with it. For suppose you should

should fall upon some Name, received not so much by choice as chance, yet so fit, that a more commodious Name could scarce be devised by counsel and deliberation, nor one more consonant to Reason ; in such a Case, What would you do ? Would you extirpate and banish the received word, to introduce one that was new and nothing better ? This practice would usurp upon the priviledge of Conversation, and be injurious to the custome of Speaking : Words contract a value by their use, and ought not to be denizen'd with rashness, or innovated by timerity : Or would you not rather confirm the Name received, yet as a new one, and from that time to be deduced from a new Origine : for this would be at the least like a chosen Science inoculated upon a new stock, which by reason of the affinity with the Root, would without any difficulty receive strength and nourishment : Or if this please you not, suppose if you please, That we now newly devised the English name of this Disease, and deduce it from the Greek word *Rachites* : the English word resulting from hence would be the *Rachites* : and how little is the difference between that and the ordinary word-*Rickets* ? Certainly so little, That the vulgar pronounciation is not wont to be greatly solicitous about so smal a difference : But we trifle too much in staying so long upon these trifles. Let the Greek Name therfore of the Disease be *νόσος Ραχίτις*, or *Rachites* (if the word may be allowed to be of the common Gender) or *tes Racheos* ; in Latin *Morbis Spinalis, vel Spine Dorsi* : and by coining a Latin Substantive out of the greek Adjective *Rachitis--idis* let the ordinary English name *Rickets* be retained, or in stead of it, to gratifie more curious ears, you may

substitute the *Rachites*. And thus much, if not too much, of the Name.



CHAP. II.

Anatomical Observations collected from the Dissection and Inspection of Bodies subdued and killed by this Disease.

BEfore we attempt an enquiry into the Nature and Causes of this Disease, we hold it convenient to premise some few certain and undoubted things, as being obvious to the Senses, which both demonstrate the real existence of this Disease, and may also be cast for a foundation, whereon to build the Superstructure of our judgment & opinion concerning this new Disease. For we would not have any man to imagine that we here treat of some Fictitious & Imaginary Evil, much less to expect that our Opinion should be credulously embraced without examination. But this we rather aim at, That the matter of our Discourse to all possibility may be known and pre-conceived in the very entrance, that we may confirm those things which we shall propose, by those things that are obvious to the Senses, as occasion shall require; and that the Reader being instructed in these, may become a competent judge of our Reasons, and with the more facility be able to interpose his judgment concerning each of them. We attest therefore
that

that many of us have been present at several Dissections of Bodies which have been separated by this Disease, and that we will in this Chapter briefly and faithfully declare those things which we have hitherto Observed by long experience and frequent Dissections, namely, Those things which we have seen with our eyes, and have handled with our hands.

In the mean time Two things are here to be premonished : The former is, That the Reader carry in his memory, That the dead Bodies which we opened were most vehemently afflicted with this disease whilst they were animated, for they are supposed for the most part to have yeilded to the very magnitude of the Disease, and therefore he must not expect that magnitude of the Affect or Symptoms which we here describe, in other Bodies yet living or newly besieged. For every Disease is moved to a Consistence, and then also Nature being oppressed and unable to maintain the conflict groweth worse and worse. The latter is that the Reader take notice, That almost all Diseases in proceſſe of time, do unite unto themselves other affects of a different kind, and therefore that chronical Diseases are for the most part complicated before death: Let him not therefore imagine that every preternatural thing that is found in dead Bodies, though destroyed by this affect, must of necessity belong to this evil; for perhaps it may rather have reference to some other Disease supervenient upon this before death, then to this very Malady: And the truth is, Anatomists through inadvertency, and want of due regard to this Caution, have foully erred in their Observations, whilst they ascribe those things which concern another

nother Disease, to another wherewith it was complicated before the dissolution. The best prevention therefore or rectification of this error is, Not to make a rash judgment from the inspection of one or two bodies, but first by a reiterated and sedulous experiment, to be able to distinguish what things perpetually occur, what for the most part, what frequently, and what but seldome, in the dissected bodies that have perished of the same Disease: for you must know, That whatsoever is not perpetually conspicuous in the opened Bodies dissolved by the same Disease, cannot appertain to the intimate and chief Essence of it: for neither the Disease it self can have an existence being separated from its Essence, nor the Essence being separated from the Disease. But enough of these things; let us now proceed to the Observations themselves.

These our Anatomical Observations are distinguished into those which do extrinsically occur, the Body being not yet opened, and those which present themselves only upon the Dissection of the Body.

I. These of the former kind are they which are outwardly visible upon the first appearance of the naked dead Body,

I An irregularity, or disproportion of the parts; namely, The Head bigger then ordinary, and the Face fat and in good constitution in respect of the other parts. And this indeed hath appeared in al those whom hitherto we have beheld to perish by this affect,

fest, one only excepted, who together with this Disease had suppurated Lungs, and was pined and disfigured with the Prylick. Yet he also throughout the whole progresse of the Disease, was full faced, and had his head somewhat big; but for about fourteen dayes before he Deceased, on a sudden all the fleshy parts about his head consumed away, and his face was like the picture of *Hippocrates*, not without the just wonder of all those who beheld so sudden a change.

2 The external members, and the muscles of the whole Body were slender and extenuated, as if they had been wasted with an Atrophy, or a Consumption. This (for so much as we know) is perpetually observed in those that die of this Disease.

3 The whole Skin, both the true, and also the fleshy and fattish Membrane, appeareth lank and hanging, and loose like a Glove, so that you would think it would contain a far greater quantity of flesh.

4 About the joynts, especially in the wrests and ankles certain swellings are conspicuous, which if they be opened, not in the fleshy or membranous parts, but in the very ends of the bones, you may perceave them to be rooted in their appendances; and if you will file away those prominencies of the bones, you will easily perceive them to be of the same similary substance with the other parts of the bones.

5 The articles or joynts, and the habits of all the external parts are less firm and rigid, and more flexible then at another time they are observed to be in dead bodies; and in particular the Neck after death is scarce stiffe with cold, at least much less then in other Carkasses.

6 The

6 The Brest is outwardly lean, and very narrow, especially under the arms, and seemeth on the sides to be as it were compressed, the ‡ Stern also is somewhat pointed, like the Keel of a Ship, or the breast of a Hen.

‡ *That part of the brest where the ribs meet.*

7 The top of the ribs to which the stern is conjoynd with gristles, are knotty, like unto the joynts of the Wrest and Ankles, as we have already said.

8 The Abdomen indeed outwardly in respect of the parts continent is lean, but inwardly in respect of the parts contained it is somewhat sticking out, and seemeth to be sweld, and extended. And these have been our Observations before the opening of the bellies.

II. The Abdomen being opened, we have Noted these things:

1 The Liver, in all that we have dissected, hath exceeded in bignesse, but was well coloured, and not much hardned, nor contaminated by any other remarkable vice. We desire som bodies should here be excepted, in which other Diseases before death were complicated with this, as in a Dropsie & an extream Consumption we remember to have hapned,

2 The Spleen (namely so far as hitherto it hath been lawfull for us to observe) for the most part is not to be contemned, whether you consider the magnitude, the colour, or the substance of it; notwithstanding we do not deny but it may otherwise happen in regard of a complication with other Diseases,

3 We

3 We have sometimes espied a wheyish water to have glided into the cavity of the Abdomen, but indeed not often, nor in any great plenty.

4 The Stomach and Guts are somewhat more infected with flatulent humors, then sound bodies usually are, which partly may be the cause of that extension of the hypochondriacal parts above mentioned.

5 The Mesentery is sometimes faultlesse, and sometimes affected with glandulous excrescences bigger then ordinary, if not with swelling bunches: But concerning the sweet-bread we declare nothing for a certainty; only we suspect that obstructions, if not a schirrhus, may sometimes invade that part. But thus we delegate, to the enquiry of others.

6 The Kidneys, Ureters, and Bladder, unlesse there be a concomitancy of some other Disease, are laudably sound. We observe in general of all the Bowels contained in this Belly, that although the parts containing them, as we have noted above, are very much extenuated and emaciated, yet are they as large and as full, if not larger and fuller, then those seen in sound bodies, as hath been said of the Liver.

III. The Sterne being with-drawn, these things have presented themselves in the breast.

1 A certain adherence or growing to of the Lungs with the ‡ Pleura which hath been more or lesse discernable in all the Bodies which hitherto

‡ *A thin and smooth skin which cloatheth the ribs in the inner side.*

we have cut up. Yet we suppose that this affect may happen without any such nourishment, although in the advancement of the Disease for the most part it cometh before the Patient die.

2 The stopings or stuffings of the lungs are no less frequent, especially in those coadhering parts. Hard humours also engendered by a thick, viscous, and blackish blood, sometimes in one, sometimes in many of the strings of the Lungs, yet are not these alwayes conspicuous, many times also Imposthums and Ulcers.

3 One amongst us doth attest, That he once saw glandulous knobs and bunches, so numerous, That they seemed to equallize, if not exceed the magnitude of the Lungs themselves: They were scituated on both sides between the Lungs and the Mediastinum (that is the Membrane that divides the middle belly) and were extended from the Canel-bone to the Diaphragma.

4 In the cavity of the Breast we have sometimes seen a collection of wheyish waters, & indeed more frequently then in the cavity of the Abdomen, but not in all.

5 One amongst us hath likewise seen this affect complicated with a great Impostume, and with the Pryssick: the Stern being removed, all the Lungs on the left side were infected with an Impostume, and on every side growing to the Pleura, and the humour being lightly crushed, a copious, thick and stinking Matter of a yellowish colour, flowed out thorow the sharp artery into the very mouth: The outward Membrane of the Lungs whereby they firmly adhered to the Pleura, appeared thicker then ordinary, and by the mediation of it, the strings on that

that side did so grow together, that you could scarce distinguish them for such: the same Membrane also, involved both the Lungs and also the Impostume it self, which being opened the magnitude of the Impostume was discernable, which by the estimation of those that were present, contained at the least two pound of water.

6 The kernel in the Canel-bone in Childhood is always observed to be great, and perhaps greater yet in those who have died of this Disease.

IV. The Skull being sawed thorow in a circular Figure, and the little cover being removed, we have observed these things :

1 The Dura Mater hath been more firme, and adhered to the Skul in more places then is usual in men of ripe years : perhaps the same may be observed in other Children not affected with this evil, although, as we suppose, not in so great a manner: for certain it is, That in new born Infants there are many and straight connexions between the Pericranian and the Dura Mater which are afterwards broken off and are scarce discernable.

2 In some Bodies that we have dissected, between the Dura and the Pia mater, and in the very ventricles of the Brain, we have found wheyish and waterish humours; from whence it is manifest, That this affect is complicated with the Hydrocephalus.

3 We have found the Brain in others that we have opened, to be firm and inculpable, and not overflowed with any waterish congestions.

4 Lastly, We have observed in some Bodies lately

ly opened, That the Carotides have exceeded their just proportion, and so also have the jugulary Veins ; but the Arteries and the Veins which are delated to the outward parts, were of an unusual slenderness.

But whether or no this be perpetual in this affect we cannot yet witnesse by an occular testimony ; yet we conjecture, That it happeneth so perpetually, but it came not sooner into our minds to examine it, since the beginning of our Anatomical enquiries into this subject.

These things being premised , our next Disquisition shall be to find out the Essence of the Disease.



CHAP.





CHAP. III.

Certain Suppositions are proposed for the easier finding out of the Essence of the Disease. First of the Essence of Health. Secondly of the Essence of a Disease. Thirdly of a threefold Division of Health and Diseases. The Explication of the third Division, and the Use of the same. The Description of a natural Constitution, and the exaltation of it. The Fourth Supposition of the Combination of three Constitutions in the same parts.

THat we may proceed the more distinctly and clearly in the finding out of the Essence of this Disease, we judged it very advantageous to premise these subsequent Suppositions:

I *That the Essence of Health doth consist in some Constitution of the Body according to Nature. But seeing this is twofold in the kind, one Essential and necessary, respecting the *id esse* simply, which during life continueth immoveable and immutable under various affections, and is indivisible: The other Accidental, having reference to the *id bene esse*, which in respect of the whole Animal, is both moveable and mu-*

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table;

table ; and hath a great latitude, and can be present or absent without the dissolution of the whole. Health consists not in the former, but in the latter Constitution.

I I. *That the Essence of a Disease in like manner consisteth not in the Essential Constitution :* For to the dissolution of the whole would by and by follow : But in the *Accidental Constitution*, namely such an one, as in respect of the whole can be present or absent without its dissolution. We have said (and not without reason) that this Constitution wherein Health and Sicknesse are founded, is moveable and accidental in respect of the whole ; for even this also in respect of some part may be essential : as for example, a finger being cut off, a Disease ariseth in the defective number of the parts, which in respect of the whole, is founded upon an *accidental Constitution* ; for that finger may be present or absent without the dissolution of the whole ; but in respect of the lost member it is founded upon an *Essential Constitution*, for this Disease being supposed, the Essence of that finger perisheth.

I I I. *That the Constitution wherein the Essence both of Health and Sicknesse consisteth, admits a threefold manner of division or distinction in the method of Discipline.* The first is somewhat thick, and is resolved into parts altogether *Concrete*, namely, It proceedeth *Kata topous*, according to the division of the parts from head to heel. The second is purely abstracted, and searcheth out all the Elements of the moveable Constitution, from whence cometh the division of Diseases into similar, organical, and common ; and then again those various subdivisions into distempers, faults of figure, superficies, cavities and passages,

sages, of magnitude, number, site and continuity. The third is as it were a middle manner, and although it hath been hitherto neglected, yet we dare avouch, That it may have its use, and that no contemptible one, in the handling of Diseases, and the finding out of the causes of the Disease; and it is divided into a Constitution Natural, Vital, and Animal.

The first is proper to, and inherent in every part, absolutely competent to it, and without any dependance upon the other parts according to the Essence of it simply; This remaineth a while after death, till it be resolved by Putrefaction, Ambustion, simple Exiccation, Mummification, Petrification, and the like violent Causes. This Constitution in respect of its simple Essence, doth not depend upon those Members which minister an Influx, but it dependeth upon them both in respect of its Conservation, and likewise of its Operation. For the vital influx ceasing after death (which is as it were the salt and condiment of it) quickly perisheth, and as long as the creature liveth, this is variously affected by the influxes, and thereupon the actions are either promoted or interrupted.

The Second is the Vital Constitution, which is produced by that continual influx from the heart thorow the arteries into the parts of the whole Body. This also it admitteth degrees, and is often subject to variations more or lesse, and sometimes also seemeth to suffer a kind of eclips, as in a swooning, a syncope, &c. yet it persevereth from the beginning to the last period of life (at least in its fountain, and in some other parts.

The Third is the Animal Constitution, which is derived

from the Brain thorow the Nerves into the Organs of Sense and Motion. This is many times totally wanting in many parts, the life notwithstanding remaining; yea it might for a long time together be defective in several parts, or all the parts, did not respiration, which is absolute necessary unto life, depend upon it. These Constitutions therefore keep such a connexion between themselves, that the second doth eternally and continually presuppose the existence of the former, and the third of the second; but there is not back again so absolute a dependance between them, because (as we have even now said) the former can for some time subsist without the second, and the second commonly altogether without the third: And these three Constitutions may in most bodies be manifestly perceived, yet we affirm not that they may be found in all. The Natural indeed and the Vital are wanting to no part: but the Animal is defective in the Bones (though the teeth will admit some doubt) gristles, perhaps ligaments, and some substances as of the Liver, Spleen, &c. we assert therefore this threefold Constitution to be in all those parts, to whom the Natural, Vital, and Animal Faculty is communicated. For although these Faculties as to the first act may be said to depend upon the Soul (which relation hath indeed no relation to the Medicinal art) yet in respect of the second act they are necessarily rooted in some material Constitution of the parts to which they belong. For whereas some say that the Vital Faculty is derived from the Heart, and the Animal from the Brain unto the other parts, that must not so be understood, as if the Faculties themselves in a wandering manner were transient from part to part (for the passing of an

an accident from subject to subject cannot be conceived by any understanding) but that the Vital Faculty is derived with, and in the vital Spirit from the Heart unto the parts, or at least is excited by some motion of the Heart and Arteries in the parts themselves, and in like manner the Animal Faculty doth descend in and with the Animal Spirit by the Nerves, or is produced in the parts by some motion of the Nerves in the Brain. Which way soever it comes to passe, we must needs confesse that some alteration is imprinted in the part it self receiving it either from the said Spirits, or from their motions. Which alteration as it is here granted to be the root of the Faculty, either Vital, or Animal in the respective parts, so is it a moveable Constitution, because it can be variously changed, remitted, and intended without the dissolution of the whole; and it is the Constitution wherein either Health or Sicknesse may consist, seeing that whensoever alteration is deficient unto the parts wherein it ought to be, or any other wayes administred then is requisite, the action will thereupon be unavoidably depraved; but if it be rightly performed, then sound and perfect health is said to be present from the part of that Constitution. Considering therefore that there are two kind of Alterations besides the natural and inherent Constitution, one from the influx of the Heart, another from the influx of the Brain in most parts; and seeing the said alterations, as they themselves are more perfect or more imperfect, do render the Faculties in the respective parts (at least as to the second act) more perfect or imperfect, and that the actions are thereupon depraved or sound, it is necessary that this threefold Constitution reside in most of the parts.

and that the said kind of alterations be medical constitutions whereon Health and Sicknesse may be grounded.

That this Division or Distinction is not frivolous or altogether unprofitable, appeareth from hence, because the practical Physitians in their Methods do rightly admonish, that in obscure Diseases the Faculties must be accurately observed, when their actions are seen to be depraved, which diligence may serve as it were for a Manuduction to guide us to the Origine of the affect; now if it be a consideration of so just importance to note the interrupted Faculties in Diseases, certainly it will be an exercise of no lesse moment to take cognizance of the Constitutions themselves, upon which those Faculties have an immediate and strict dependance.

Now least any man should conceive that there is almost a coincidence between this third Division and the second, he may observe, if he will diligently weigh the matter, That every member of this division doth in some manner include all the members of the next precedent, namely that the natural Constitution doth comprehend primarily indeed the similar Constitution, but that secondarily and in order to the whole creature, it containeth in a sort the conformation and continuity; in like manner that the Vital and Animal Constitution do in their way so clearly participate of all the Members of the said Division, that to offer proofs of it were an unnecessary undertaking: Only we desire the Reader to take notice (which also we even now intimated) That the natural Constitution primarily and principally hath respect unto the temperament, the common qualities, the plenty of the Spirits, and the peculiar

cular disposition of them (which by some are referred to the form and the whole substance) but that it hath respect unto the manner of the Organe and the continuity as it were secondarily, and in order to the whole creature, and that it can scarce be otherwise hurt or vitiated by them. Yet we must not deny but that the natural Constitution is sometimes vitiated as it is meerly Organical, for thus it falleth out in the obstructions of the natural passages; as for example, when a stone is impacted or grown to hardnesse in the passage of the Meter or the yard, and in the like cases: but this happeneth unto it especially in as much as the passage is ordained for the use and conservation of the whole; but for the most part the Organical vices in the natural Constitution are of lesse note and consideration then the similar.

These things may suffice to be spoken in a general way of this triple Constitution. We will now in particular speak a few things of them in few words.

The *Natural Constitution* which is proper unto and inherent in every part, may be known by this description, That it is the manner of the natural Being, settled in the parts, competent to them, in as much as they are aptly constituted by their temperament, and common quallities, by their sufficient portion and convenient disposition of ingenerated Spirits, and by their just conformation and continuity, to a perfect performance of natural actions, together with the concurrence of the Vital (and perhaps the Animal) influx. Therefore when there is in any part a just temperament, convenient common qualities, an exquisite proportion, and harmonious disposition .

position of inherent Spirits. Finally, when there is a laudable conformation and unity, and yet notwithstanding all this, the natural action is depraved, we may well conclude that it is not vitiated by the natural Constitution, but by reason of the concurrent cause, namely the vital or natural influx, or of both together; for the natural actions in creatures in regard of the union and wedlock of life, are exalted to a more eminent condition then otherwis they would attain unto by the natural Constitution alone. And from hence it comes to passe, That although the natural Constitution in slain Creatures remaineth after death undepraved for a while, yet the attractive and retentive Faculty, the concoction of the aliment, and the expulsion of the excrement do altogether cease: And in Diseases also many times the natural Constitution is at first untoucht, yet the natural action is vitiated meerly by the defect of the due concurrence of the vital influx: after the same manner sometimes the natural and vital Constitution being sound and healthful, yet some natural action is depraved by reason of the defect of some animal influx and concurence: but this for the most part happeneth only in the Nervous, Fibrous, and Membranous parts, especially where they make a hollownesse, but seldom or not at all in the substance of the parts: As in the Palsy the excrements are many times unduly retained, by reason only of the astonishment and insensiblenesse of the guts, the other constitutions being sound. Therefore in these cases, when some natural action is hurt, we must not presently conclude that the natural Constitution is first vitiated, but we must with diligence enquire out that Constitution which is first vitiated, for that

is to be looked upon as the root and first essence of the evil ; in like manner if some vital action be depraved, we must not presently infer that the vital Constitution is primarily vitiated ; because sometimes the first Origin is more rightly deduced from the natural, or perhaps the animal Constitution : as for example, Through the intensivenesse of cold, a finger is mortified by inflammation : in this case it is true that the influx of the vital blood is plainly intercepted ; yet the beginning of that interception must be sought out in the natural Constitution of that very part so benumbed : So also in a Convulsion the circulation of the blood is perhaps something disturbed and interrupted ; but the first depravation must be ascribed to the animal, not to the vital Constitution. On the contrary, in a Feaver the Head is invaded, but the source of the evil will peradventure be found out in the vital Constitution : so perhaps the Flesh is wasted, and al the natural Spirits are decayed ; yet the root of the evil wil be found out in the vital, not in the natural Constitution : So that any Constitution of the three before named may be in several Difeases, sometimes the first, sometimes the second, and sometimes the third cause of vitiated actions.


Not only many other parts of the body (yea simply al the sensible) which exhibit not an influx, neither are subservient as delatory parts, do naturally admit this threefold Constitution, but besides also even the Heart it self, and all the arteries, and the Brain and al the nerves, so that the Brain (excepting the fault in its natural Constitution) may be cherished and helped by the vital Spirit which is transmitted thorow the veins and the arteries, being wel affected,

affected, or vitiated and hurt if that be ill affected : And after the same manner also may the Heart by the animal Spirit which hath an influx thorow the recurent nerve of the sixth pair, the arteries also by the animal influx thorow the nerves by a way perhaps not yet found out: And Finally, The Nerves also by the vital Spirit deduced thorow the Arteries.



CHAP. IV.

That the Essence of this Disease consists not in the Animal or Vital, but in the Natural Constitution; not as Organical, but as Similar : Three Limitations are Propounded.

 These things being Presupposed, We shal proceed to enquir in what Constitution of the parts the first Root or Essence of this affect is lodged. Be the first Conclusion therefore this,

The First Root of this Affect is not in the Animal Constitution, or in that which dependeth upon the Influx of the Brain into the parts. Indeed we confesse that al the nerves which without the Skul proceed from the spinal marrow, are found to be loose and weak in this affect ; yet this doth not here seem to arise from a defect of the influx of the Brain, which we thus prove, First the loosnesse and weaknesse

ness of the nerves, which cometh primarily from the Brain, is almost alwayes consociated with somnolency and drowinesse; but this Symptom happeneth but rarely, and by accident only in this affect. Secondly, As we remember, we never knew the Palsy, or the Apoplexy to supervene or follow upon this Disease; but it ought necessarily so to do, and that very often (at least in the confirmation of the Disease) if this loosnesse and weaknes of the nerves should take beginning from a defect of the influx of the Brain. Thirdly, We have observed the Brain to be sufficiently firm and inculpable in many dissected after death. Fourthly, For the most part those that are afflicted with this evil are ingenious in respect of their age, which doth evidently attest the vigour and vivacity of the Brain.

The Second Conclusion. *The first root of this affect is not in the Vital Constitution, or in that which dependeth upon the Influx of the Heart into the parts.* An unequal distribution of blood indeed almost (if not altogether) perpetual may be observed in this affect: nevertheless the chief reason of this inequality must be ascribed, not to the inequality of the influx of the Heart or Arteries, but to the unequal reception and unaptnesse in the parts themselves to receive it; for the Heart and the Arteries do for their part indiscriminately or equally distribute the blood with the Spirits every way into the parts. But if it so fall out that an Artery of some part be interrupted in his function by reason of the benumbednesse and stupefaction of that part, or the parts adjacent, there is a necessity that the blood must be minutely transmitted thither, and so unequally in respect of the other parts which expeditely and aptly receive the blood.

There-

Therefore in this case this inequality of distribution doth properly and primarily depend upon a preexistent fault without the artery pertaining to the natural Constitution of the parts.

Object. But some may Object, *Although perhaps the aforesaid inequality hath no dependance upon the Heart, yet it may so happen that a weak Pulse may suffice to distribute the blood thorow the lesser Circulations in the inner parts, which nevertheless may not be altogether so sufficient to undergo that duty thorow the greater Circulations in the outward parts which are more remote from the Heart, the fountain of blood.*

Answer. We Answer, That this Objection was formerly of so great importance with one of us, that he supposed such an inequality of the vital influx did belong to the prime Essence of this Disease, and did therefore endeavour to deduce the reason of the first Symptoms from it. But after second thoughts, the matter being more neerly and deeply examined, he was of Opinion, That this inequality of the vital influx had no relation to the primary, but to the secondary Essence of the Disease. But we return to the solution of the Argument. And First we grant indeed that in this affect there is an unequal distribution of the blood; and that in the internal parts and in the head it is more liberal, in the external more sparing. Secondly we grant that the Circulation of the blood may be kept in the inward parts, even although no Pulse appear in the outward parts; but this happeneth only in a vehement either weakness or oppression of the vital Spirits, as in a swooning, and a strong hysterical paroxysm, or fit of the
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Mother, in which affect some that have been accounted for dead have been seen to revive again. Thirdly we grant that a more liberal Circulation of the blood may be in the internal then the external parts, yea and in some one external part more then in another, as it happeneth in the inflammation of some external member.

These things being granted, we affirm, that in the *first Case* the inequality of the distribution of the blood doth not principally depend upon the weakness of the Pulsifical vertue for as much as concerns the heart; and the reason hereof is plain. For the heart, as we have already said, doth emit the blood indiscriminately or equally, and with one continuation from it self into the Aorta or chief artery, even at such time when as the Pulse is most weak. This artery doth exonerate or disburthen it self again with al possible expedition, and from hence proceedeth the inequality of the diffusion of the blood, as the blood is more easily impelled from on rivelet then from another. This inequality notwithstanding must not properly and primarily be attributed to the heart, but to the recipient parts, and to the particular transmitting arteries. For any primary affect of the heart is necessarily universal, and communicated to al the parts of the body: wherefore although we grant this enequality of the Circulation of the blood to be in the secondary Essence of this Disease, yet we exclude it from the primary.

Moreover in the *Second Case* propounded, we say that there is a great disparity between the cases of extream necessity, and ordinary cases. Neither indeed do we know whether in the said cases the circula-

culation in the inward parts, howsoever it be granted, be of any moment. And for so much as concerneth the present businessse, we deny any such debility of the heart in this affect, that the Pulse should be defective in the outward parts; yea we have not observed that any one afflicted with this Disease hath been prone to fall into an extacy, or a swooning; which would readily happen if the origin of the Disease were rooted in the debility of the heart itself. Besides when we have seen such as were sick in their tender age, to endure without any loss of strength sometimes a liberal education or flowing forth of the blood from the opened veins of their ears, yea and seen it sometimes reiterated with good successe. Finally, When also they have very well endured purgations, with respect had to their age, it doth not appear to us how the first root of the evil can be ascribed to the weakness of the vital constitution.

In the *Third Case* it is evidently manifest that the first cause of this unequal circulation of the blood is some disposition of an outward part, as in an inflamed member, laboring under some private Disease, there happeneth a more full and impetuous Pulse by reason of the accidental heat of the artery, infused by the immoderation of heat which is in that outward part.

Therefore seeing that the Essence of this affect cannot be primarily rooted in the animal nor the vital Constitution of the parts (as we have now shewed) it followeth (which shall be the Third Conclusion) *That the primary Essence, or first root of this affect, consisteth in the proper or inherant constitution of the parts.* But because the natural Constitution (as we have said

said above) consisteth partly in the common qualities and the temperament, and partly in a just plenty and disposition of the inherent Spirits, and again partly in the organical construction and continuity; our next enquiry must be to find out in which of the prementioned constitutions it lodgeth, and whether it be rooted in one alone, or in many, or in altogether. Be the Fourth Conclusion therefore this :

This affect is not radicated in the Organical Constitution of the parts. For although in progresse of time the Organs themselves are divers wayes affected in respect of their conformation, quantity, and site, as it is sufficiently manifest from the encreased bulk of the head, liver, &c. from the tumours of the bones unto the wrests, the anklis and the extremities of the ribs ; from various obstructions and the extenuation of the outward parts ; seeing nevertheless that all these things depend upon a higher origin, and howsoever also we may necessarily admit these things in a Disease confirmed, and now variously compounded ; yet in the original Essence, we presume, for the subsequent reasons they are to be rejected.

First, *Because the depravations aforesaid in the Organical parts do not appear presently in the beginning of the Disease, but encrease afterwards by little and little :* And although perhaps some of these may be said from the beginning to have taken root in the body, notwithstanding they cannot as yet be immediatly discerned by the sense, neither do they manifestly hurt any actions, and for that reason they cannot appertain to the first Essence of the Disease.

Secondly, *Because the Organical vices aforesaid are not the Causes but the Effects rather of the chief Symptoms which from the beginning exhibit themselves in this affect.*

affect. For the augmented figure of the head, liver, &c. the standing out of the bones, and the leanness of the external parts, are more rightly referred to the inequality of the nourishment, then on the contrary the inequality of the nourishment should be ascribed to them: For when one part doth excessively encrease, and another is defrauded of a due & decent augmentation, there is a necessity that a disproportionate and an unequal nourishment must not only be present in the parts, but also have had a preexistence in the body, whereby one part is nourished, and another neglected beneath a mediocrity. But seeing this unequal nourishment is a depraved action, and so a Symptom presupposing some preexistent Disease, and yet withal (as we have said) doth precede, as a cause, the organical vices aforesaid, it is manifest that those organical vices are not the first root of this Disease. As for the obstructions which indeed are for the most part conjoined with this affect, yet nevertheless there is a great deal of reason to exclude them from the first Essence of this Disease, because they neither specify the Disease, neither can any reason of the Symptoms be rendered from them, neither do they perpetually besiege some certain and determinate noble part. Some man perhaps, who hath respect to the excessive magnitude of the liver, may object that in this affect that is perpetually obstructed, and thereupon the sanguification being vitiated the other things are preposterously derived; but if this swelling of the Liver did alwayes proceed from the obstruction of it, then a paleness of complexion, a cachexia or indigestion, and by the advantage of time, the Dropsie it self should necessarily and perpetually accom-
pany

pany this affect : Moreover, The Liver should al-
ways be seen to be vitiated in the colour, and at
the dissection hard tumors and knots should be ob-
served in the substance of it, especially in an invete-
rate affect, and that which killed the Patient ; but
seeing these things do not frequently (much lesse
perpetually) occur in dead bodies, the augmented
bulk of it must rather be refered to the irregular nu-
trition : Moreover, we deny it not but that we have
observed by Anatomy in those who have perished
of this Disease, obstructions, various tumours, and
knotty excrescencies in the Lungs, but we attest
withal, That we have seen some Infants, yea Boys
lightly affected with this evil, in whom there was
no suspicion of vitiated Lungs, for there was no
cough, no impediment of respiration, which neces-
sarily is an individual companion of the obstruction
of the Lungs.

Thirdly, Because a sufficient reason of all the
Symptoms proper to this Disease, may more cleerly
and easily be derived from other fountains, as we
shall see anon.

And thus we have sufficiently proved, That this
affect in respect of the first Essence of it, consists not
in the Organical Constitution of the natural parts.
The same arguments wil more effectually convince
(more might be produced, but we judge accumu-
lations unnecessary) That this evil is not radicated
in the continuity of the natural parts, so that there
needs no more words to prove it.

The Fifth Conclusion. *This Disease is primarily
rooted in the similiary Constitution of the natural parts :*
And therefore in respect of the radical Essence ther-
of, it is a similiary Disease.

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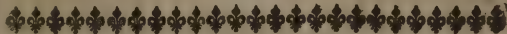
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Disease, as such, is not perpetually Simple, but sometimes variously compounded (namely a Distemper is either Simple, or Compound, and this becomes such, not only by the first qualities among themselves, but perhaps by hidden qualities conjoynd together; or, which is more agreeable to our Conceptions, especially in the present business, by a kind of sure proportion and medication of the inherent Spirits) We judge this to be a Compound Disease, and we assert the *prime* and *radical* Essence thereof to consist in a cold and moist Distemper, with a Defect and *stupefaction* of the inherent Spirits, concurring in the inherent constitution of the parts primarily affected. But before we proceed to an higher Explication of this Opinion, we will premise some Limitations of it.

The First shal be this: *That in this Disease, some parts of the Body are Primarily, and others Secondarily affected:* And truly, to us the External parts seem sooner to be affected than the Brain and Bowels, as we shall declare more at large when we come to speak of the parts affected.

The Second is this: *That in those parts alone which are Primarily affected, do labor under a notable cold Distemper with penury and stupefaction of spirits:* For the Brain perhaps and the Bowels may be moderately hot, and sufficiently abound with Spirits, by reason of the copious vital influx; and moisture may exceed in them by reason of the affusion of our overplentiful aliment: but the other External parts are alwaies affected with a cold and moist Distemper, and a benumbedness of the natural Spirit, &c. Whereupon we assert, that in this Disease they are primarily affected, and that they alone are the seat of the first Essence of this Disease, Be

Be this the Third : *All the External parts, and those first affected, do not equally labor under a cold and moist Distemper, and with benumbedness of Spirits, &c.* For the Ligaments, Tendons, and Nerves, are in their own nature more cold, and less moist ; the Muscles, or fleshy parts are rather more moist, and less cold : the skinny parts usually retain a mediocrity, yet all the said parts recede more or less from the natural towards a cold and moist temper. And in like manner, although some of the said parts do require a greater plenty and activity of Spirits than others, yet all of them a just proportion, being observed to the plenty and activity respectively due to each of them, are defective and destitute of that just proportion.




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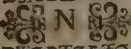




CHAP. V.

*The preposed Opinion is examined by Parts.
First, That this Disease is a cold Distemper.
An Objection, and the Answer thereunto;
That it is moist: That it consisteth in the pe-
nury or paucity of the Spirits. An Objection,
with the Answer. Finally, That this Dis-
ease consisteth in the stupefaction of the Spi-
rits.*

 *Now let us more neerly examin the O-
pinion propoled, and assert it by
parts.*

 *First, That the parts first affected do
labor under a cold distemper may be
proved. First, from the unequal and
diminished nutrition of the said parts; for as the
inborn heat when it is augmented to a just propor-
tion doth very much conduce to further the con-
coction of the Aliment; so if it be too remiss, it ea-
sily retarderth and lesseneth the same.*

*Secondly, The same distemper is proved from
the slowness and unaptness to motion; and also
from the averfation to exercise, and desire to rest.
For as the activity and agility of the Body is attri-
buted to the Heat, so the tardity and slothfulness of
it is in great part ascribed to Cold, Namely, sup-
posing (as before) that this slothfulness hath no de-
pendance*

pendance upon the fault of the animal influx.

Thirdly, It is further confirmed, because this Disease many times followeth other accute Diseases, whereby they end not seldom (after the Wast or Consumption of the Natural heat) in a cold distemper.

Besides, It also receiveth Chronical Diseases which extenuate the Body, and such as in any manner are prone to leave a cold distemper behind them as Pertinacious Obstructions, the Scurvy, Cachexy &c.

Moreover, Because it succeedeth the importune suppression of Scabbedness, and Impetiginous effects, as we have often observed, when the Scabs have newly broken out again, and the Itch is revived, such Boyes have been easily restored to health, because by that means the Natural heat is reaugmented in the outward Members.

Lastly, Because many times it happeneth after a continual use of cold, thick, and viscous aliment, after surfeiting and idleness, and the like evident causes, either diminishing or overwhelming the Natural heat.

Fourthly, It is yet more plainly evinced, because those helps which excite, augment, and cherish the heat in the outward parts, as various agitations, rubbings, and anointing of the Body, do contribute a large share to the advancement of this Cure. These things being all cast together into a heap, it is sufficiently conspicuous that a cold distemper of the Natural constitution of the parts first affected is contained in the primary essence of this Disease.

Object. But here we meet with a specious Objection, *That a little Fever, especially a slow one, or such*

is erratical and wandering, is frequently conjoyned with this affect, which at the same time seemeth absolutely inconsistent with a cool distemper. For all Feavers by all men are accounted to be a hot distemper which is diametrically opposite to the said essence.

We Answer (that we may not here interpose any thing concerning the essence of a Feaver) we freely grant, for so much as concerns the present Question, that a Feaver is a hot distemper; but this doth not chiefly consist in the Natural constitution of the parts, but in the vital constitution, namely in the influent heat preternaturally affected. For a Feaver is not some private Disease, but universal, and is diffused from the Heart through the Arteries in and with the vital Spirit, be it either overheated, or otherwise viciated. For this preternatural heat hath only a respect to that inherent as a cause potent and able variously to alter it, yet indeed by degrees and little and little. For first the influent heat is manifestly an actual heat, but the heat of the natural constitution is only potential: wherefore we affirm that a cold distemper in respect of a natural and potential heat may consist with a hot distemper in respect of an actual and influent heat. For indeed an actual heat is not so directly averse to a cold distemper, which is so called by reason of a defect of the potential heat, but it may (the cause persevering) consist for a good while with it. As for example, there is an actual heat in Simple Water, Barly Water, diverse Juleps and the like being made hot, although at the same time they are potentially cold. So that to be actually hot, and potentially hot differ not in the Degree, but in the Species, neither are they so directly contrary to one another, that one must

must presently expel the other out of a subject?

Moreover, Secondly, The influent hot distemper doth not so much correct the inherent cold distemper, as by accident it augmenteth it, namely by a wast and dissipation of the Natural Spirits, wherein chiefly the natural and potential heat resides: Just after the same manner as the actual heat introduced by the fire diminisheth the potential heat of the Wine. Whereupon any kind of Feaver supervening upon this Disease, usually brings more damage than advantage to the sick.

Secondly, We affirm, a moist distemper to be lodged together in the parts first affected; this is manifest from the laxity and softness of the said parts: and this sign likewise doth more strongly confirm the same thing, because the said parts are extenuated, so that unless there were a redundancy of moisture in them, a certain rigidity and roughness would assault the touch; again, a cold distemper doth very rarely continue long without a moist: and lastly, things helpful and hurtful attest this truth, for drying things are helpful, and moistning things are hurtful.

Thirdly, we affirm, That in the parts first affected there is a penury of natural spirits. This is proved by the very same arguments which we produced to evince it to be a cold distemper.

For first the unequal and imminute nutrition of the parts first affected doth not only argue a coldness of temper, but withal, a want of natural spirits, for otherwise this defect of nutrition might be easily corrected. For the cause of that coldness wherewith the defect of the spirit is conjoynded, or some peccant humor is not impacted, is easily cashired,

and sooner then is wont in this disease, as may be seen in the parts grown extream cold in the winte season; for example sake, in the handling of snow; the parts so extreamly cooled provided that they be rightly handled, wil return to their pristime temperamēt in few hours: but wher there is a distemper with the matter of it, as a case conjoynd, or where ther is a defect of the inherent spirits, such a distemper indeed is not so soon nor so easily removed. But in the present affect we cannot affirm that a conjoynd or impacted matter of any note is (at the least alwise) caused in the parts first affected, because they are observed to be more withered, feeble, and extreamly extenuated, and seeing this affect is very different from *Cachexia* and the Virgins disease; in the which for the most part, it is not the want of Spirits, but the conjoynd matter that cherisheth the cold distemper: wherefore we may rightly infer that the pertinacity of this evil doth chiefly depend upon the defect of the natural Spirits. Secondly, The same is proved after the same manner by the second argument before alleadged for the cold distemper, namely from sloth and avernsness to excercise. For activity hath not only a dependance upon the temper, but chiefly upon the fulness of the Spirits: as may be seen in strong and heathful men, who in winter time, and hardest frost, are more prompt and inclinable to violent excercises, then in summer, when the inherent Spirits are wont to be somewhat dissolved. Thirdly, Feavers, and long extenuating diseases, as they oiten introduce a cold distemper, so they evidently ditminish and dissipate the inherent Spirits. To these we ad that argument which is deduced from the constitution of the Parents. the Parents that are more strong and lusty (experience
wit-

witnesseth it) and accustomed to labour, seldom bring forth children obnoxious to this disease : on the contrary, such as are weak, sickly, idle, tender, delicate, very prone to immoderate, premature, or decriped Venery, such as are troubled with a *Gonorrhoea*, &c. for the most part beget children subject to this affect : Namely, because the Seminary principles are furnished only with a deficiency of Spirits. We should now proceed to the fourth assertion, but must first remove a *remora* that cometh in the way.

Object. For some may object, *That the natural cold distemper is subordinated to the want of Spirits, and not contradiistinguished to it, as is here supposed. For the paucity of the Spirits seemeth to be the very cause of the cold distemper, and the natural heat be it more intense or more remiss, seemeth respectively to follow the proportion of the natural Spirits, as being radicated in them as their first subject.*

We answer. First, That the inherent heat is indeed first grounded and subjected in the inherent Spirits. Moreover as the inward heat is divided into two parts, namely, the natural, and the acquired heat; so the inward Spirit must be also conceived to be twofold, the primigenial or seminal derived from the Parents in the seed, and the acquired Spirit contracted from a perfect assimilation of the aliment, the former Spirit is the basis of the engrafted natural heat, the latter of the inward acquired heat; we mean, not that these heats and Spirits are in themselves distinct in the species, but only in their origin and degree of perfection, which is sufficient to invest them with a various appellation. For in nutrition the assimilation of the aliment proceedeth even to a specifical identity, and not an individual, although sometimes, also it attaineth not the degree of original

nal perfection. For which cause it seemed sufficient to us to have named the implanted heat, and the implanted Spirit, without any higher distinction; and therefore we grant that the implanted heat is first subjected and rooted in the Spirits, and that it is nothing else then a certain modification of the said Spirits, whereby they being irradiated by the vital heat do delight to endeavor to diffuse themselves and to enlarge their dominions, by attracting, retaining, assimilating the aliments like unto themselves by severing the excrements, and lastly, by disposing the things acquired in due places: we say, likewise that this endeavor (wherin we place the essence of heat) by reason that it is diffusive doth somewhat dissipate and waste the implanted Spirits, which because of this effect are vulgarly called by the name of radical moisture continually devoured and consumed by the heat. Thus far we grant the argument: But in the second place we affirm that the implanted heat doth differ from the hot implanted temperament; for the implanted heat is only a part of the hot *implanted temperament*, for not only a Spirit, but sulphur also, and salt, or perhaps choler, contribute their heat to the constitution of the whole hot implanted temperament, wherof the implanted heat is only a part. Wherefore it is falsely suggested in the propounded argument, that a plenty of Spirits is the sole cause of a hot distemper, and a paucity of a cold distemper: for a pound of the flesh of an infant containeth more implanted Spirits then a pound of a young mans flesh: yet it is most evident that the temperament of a young man is far more hot then that of an infant: a hot temperament cannot therefore depend upon the sole plenty of the *Spirits*, nor a cold temperament upon a want of *Spirits*.

Spirits. Moreover in many maladies a hot distemper is consistent with a paucity of Spirits; as in a *Hætick* of the third degree; in like manner of a cold distemper with a competent plenty of Spirits, as in the Green sicknels.

We say thirdly, That a plenty or paucity of Spirits is not perpetually a sufficient cause to determine the temperament either hot or cold; as on the contrary, neither doth a hot, nor a cold temperament certainly and necessarily demonstrate a plenty or paucity of Spirits, as is manifest from the instance given. So that the temperament is no sure sign of the quantity of the Spirits, nor the quantity of the Spirits a sure sign of the temperament; and therefore purposeth not without just cause, these things come to be considered and examined as contradistinct, if we wil procure a certain and inconfused knowledge of them.

Fourthly we answer, That although it were granted, that the implanted heat is subjected in the implanted *Spirits*, yet notwithstanding that heat is not intended nor remitted according to the sole plenty, or paucity of *Spirits*; for the *Spirits* howsoever sufficiently copious, yet if they be too much fixed, torpid, and as it were frozen; they exhibit not any implanted heat worthy of consideration. As for example, the white of an egge swelleth with copious *Spirits*, yet are they so benumbed, and the inward heat is thereupon so small, that it obtaineth not the formation of a chicken, unless it be first excited by incubation, or some such other heat: therefore we may lawfully conclude, that a consideration from the want of *Spirits* is sufficiently distinct from the consideration of a cold implanted temperament, although the objected argument doth seem to insinuate

ate the contrary. Moreover from this fourth article of our answer, there resulteth a fourth assertion of the essence propounded, Namely,

That beside the distemper and want of *Spirits* a certain benumdness of them, must be added as a distinct part also of the essence of the disease. This benumdness of the engrafted *Spirits* appeareth chiefly by the defective nutrition, and averlation from exercise, which proceed not primarily (as we have proved above) from any defect of the influx of the brain. It is also manifest from hence, because all those things which drive out that stupefaction of the *Spirits*, although they do not altogether drive it away, yet they conduce very much to the cure of this disease; as exercises of any kind augmented by degrees, frictions, anoyntings, &c. and things inwardly taken, of a heating, cutting, purging, and gently opening quality. But that this benumdness is sufficiently distinct from the want of *Spirits* (besides that which we have said in the 3. article of our Answer is sufficiently manifest from hence, because an excessive excitation, contrary to a benumbedness is often conjoined with a penury of *Spirits*: as it commonly falleth out in a *Hætick* feaver, in dissolving fluxes, and the like diseases, in which howsoever there be a want of *Spirits*, yet no benumbedness is consociated; but on the contrary that vehement excitation, & propensity to motion, must be restrained.

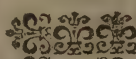
On the contrary, copious *Spirits* may consist with a benumbedness, as in wheat or meal. For although it may seem to have but little *Spirit*, because the *Spirits* of it do yet lurk in their fixation, and benumbedness; yet indeed the *Spirits* do abound in it, and may be summoned out by a simple fermentation, and excited to a manifestation of their *activi-*

ty: As strong Beer made thereof doth plainly declare. In like manner juice newly pressed out of immature grapes, is very mild and pleasant, containing in the meantime plenty of *Spirits*, which afterwards the due fermentation being finished, reveal themselves in generous wine.

Let us conclude therefore that the benumbed-nels of the *Spirits* in this affect deserveth a particular and distinct consideration,

CHAP. VI.

Of the Part first affected in this Disease.

 E have already propounded the first Essence of this Disease, it remaineth now that we enquire after the first Subject in which that Essence is radicated.

The heart and the brain do here seem rightly to be excluded, for the reasons before alleadged, the repetition whereof for brevity sake we shal omit.

The liver and the Lungs are not as yet exempted from all suspicion of this fault, we wil therefore examine these bowels apart, and first we demand,

Whether the Liver be the subject of the first essence of this Disease?

The principal Argument is for the Affirmative, because this Disease may seem to proceed from a vicious sanguification, the Shop and Work-house whereof (at least in probability) the Liver is supposed to be, but that a viciated sanguification is the
first

first origine of this disease seems to be made manifest by many signs. First, because this disease for the most part followeth after many other great diseases, either acute or chronical, which in great measure have beforehand weakned the sanguifical vertue of the Liver. Secondly, Because this disease doth not only depend upon outward, but inward causes, namely the vicious humors. And seeing the vicious humors are generated in and with the mas of blood in the liver, the first essence of this affect seemeth to be referred hither. Thirdly, The Liver is perpetually observed to be bigger than ordinary in this affect; which manifestly witnesseth the Liver to be affected. Fourthly, those internal Medicines which have a faculty to putrifie the blood are requisite to the cure of this disease. and being exhibited are found to be very profitable. 5. The mission of blood from the veins of the ears (which is not the meanest help to vanquish this affect) doth more than sufficiently argue some fault to be in the blood, which seemeth to be ascribed to the constitution of the Liver, in as much as it doth sanguificate. These Arguments have so far prevailed upon some very famous Physitians, that thereupon they have attributed the first essence of this disease to the Liver alone.

But we conceive that these things may be sufficiently answered, if we shall first grant what can be further or what hath already been rightly said concerning this matter, and then dissolve those things which are inferred by bad and invalid consequence.

First, Therefore we grant that the mas of blood is viciated in this affect, and that from thence is conveyed a continual supply of blood to the disease.

We grant also for the present that the Liver is the Officin of sanguification : but we deny that every viciosity of the blood doth depend upon the viciated sanguification constitution of the Liver. For first, the blood may be corrupted by unwholsom aliment, the Liver in the mean time remaining sound, in like manner if the first concoction in the ventricle by any cause whatsoever be rendred imperfect; yet it cannot be fully corrected by the second concoction in the Liver be that bowel never so sound. Besides, although the generation of vicious blood should be solely ascribed to the Liver, yet the other parts should necessarily concur to the conservation of that which is generated, as the Kidneyes, the Spleen, the Pancreas, the Womb &c. yea, and it seemeth undeniable, that all the parts which the blood washeth in his circulation, do variously alter it, whilst according to the capacity of the subject they imprint their qualities in it : for they are natural agents, and act by necessity and continually without any suspension of their actions or intervenient pauses, unless they be estrained by some predominant power: therefore if these be ill affected, they give a greater or a less tincture of pollution, to the blood which passes through them, as may be seen in a contagion gotten by an external contact communicated to the inward parts. Moreover, sometimes a great pollution from the other diseased parts is insinuated into the blood, the liver in the interim being safe, as hath been sometimes observed in opened bodies, that have perished by a Dropsie, in whom the Liver was found to be sufficiently sound and whol. Moreover, We grant that the faults of the Blood do frequently derive their beginning from the depravedness of their sanguifical constitution of the Liver

Liver, and that that depraved constitution is an affect of the Liver. But we deny this to be the same Disease whereof we now treat, because it differs from it in the whole Species. For that same depraved constitution of the Liver is alike common to men of full age, to Boys, and Children; but this disease is solely appropriated to boys and infants. Again, We grant that a vicious constitution of the Liver may by generating a corrupt blood be a common cause, and foment the augmentation of this affect: but we deny that to be the disease it self, whereof we now speak, or any part of the first essence thereof. For it is one thing to produce a common cause of a disease, and another thing to be of the first essence of a disease. We deny also that to be the continent cause of this disease, or to be a sufficient cause of it self alone, or to be always a cause. For the vicious constitution of the Liver, of what kind soever you will suppose it, doth not produce this affect in those that are come to ripeness of years, nor perhaps always in young boys: and this our answer in general to the argument: we proceed now in a like method to the confirmation of it.

First, Therefore we grant that this affect doth often follow other diseases be they either acute or chronical, but not so much because they had hurt the sanguifical constitution of the Liver, as because they had left the outward parts cold and benumbed the ingrafted Spirits exhausted. Although we may easily admit the viciated liver to be able to foment the evil by reason of the depraved sanguification.

Secondly, We grant that this affect doth not only depend upon outward causes, but also upon inward, namely the faults of the blood it self; but
that

that all these faults have their beginning from the Liver, that we flatly deny for the Reasons before alleadged.

Thirdly, We grant that the mole or substance of the Liver is augmented in this affect, but we deny that to be the first essence of the Disease, for the reasons above rehearsed, where we reject the organical vices from the primary essence of this evil. Yet we admit this and the like diseases in a secondary essence of this affect, as we shal see hereafter.

Fourthly, We grant that internal Medicines can both alter and purify the blood, but in the present Affect they conduce to the cure; in this regard, principally, because they facilitate the distribution of the blood to the outward members, attenuating the thicker and cutting the viscous parts thereof, and because they also do impregnate the blood, with a copious and benign Spirit, whereupon it happens, that the implanted Spirits of the parts before languishing, are cherished, augmented, and excited. In the mean time we acknowledge that general benefit which accrew to the whole body, by the purging of the blood, by sledge, vomit, urine, or any other ways of evacuation. Only this is it which we affirm, that the more specifical part of the cure is wrought by way of alteration with the medicines aforesaid, as we have intimated already.

Fifthly, and lastly, We grant that the opening the veins in the ears doth somewhat attenuate the blood, and conduce to the renovation of it, as also to the distribution of it to the external parts, and the withdrawing of it from the internal parts oppressed with too much plenty, and in that respect very much to advance the cure: yet we deny that it can from thence be rightly inferred: that the first Essence of the disease is radicated in the

Liver. And thus we suppose we have satisfied the reasons brought for the confirmation of this opinion. We wil now produce some arguments that seem to perswade the contrary.

The first is this, The first Essence of a disease doth Specificate the Disease. But the vitiated sanguifical constitution (however it be conceived) doth not specificate this Disease. For seing that this Disease doth appertain to infants only and children ; it behoveth them who adhere to the contrary opinion to design some certain way of the depraved sanguifical Constitution of the Liver, which may be proper to the tender age alone, but no depravation of the sanguifical Constitution of the Liver can be imagined, which is not also common to those of ripe years. If therefore the first Essence of this Disease should consist in that, this Disease would at least sometimes be observed in those of ripe years, which notwithstanding hath never been hitherto observed.

Secondly, The subject of the first essence of a Disease is so long affected with that Essence, as the Disease continueth. For neither can the Disease Exist without its Essence, neither can that Essence wander from one part to another : If therefore the Liver be the subject of the first Essence of this Disease, then should it be affected thorowout the whole progress of the Disease ; which nevertheless doth not seem credible, seeing that the Livers of those who have died of this Disease, and have been dissected, have excepting the augmented bulk thereof, been seen inculpable in respect of the other conditions.

Thirdly, If the Liver be the subject of the first Essence of this Disease, necessarily it is, that upon the daily increase of the Disease that should be more grievously and evidently afflicted, and before death certainly it should be marked by some manifest signs. For seeing

that

that every Disease is contrary to the nature of that part it besiegeth, and doth dayly more and more damnify and empair it : And although the beginnings of Diseases are many times obscure, yet in process of time (especially if they continue till the last day of life) they imprint most evident marks in the parts primarily affected ; so that it can scarce be avoyded, but that upon the opening of the body they will be apparent to the first sight : although also when an enquiry is appointed into some Chronical Disease, by dissection of the body that perished by it, the finding of it out be grown difficult by reason of some other intervenient Diseases, or otherwise complicated : Yet the part first affected is ever observed to be grievously and manifestly hurt. Seing therefore in those whom this Disease hath destroyed, the Liver is oftentimes found, excepting the augmented bulk, or at least not considerably hurt, it will be to infer, that that bowel is not the subject of the first Essence of this Disease.

Fourthly, If the liver were the subject of the first essence of this disease, it should labor under a cold and moist distemper, and also under a penury and benumbedness of spirits, as is sufficiently manifest from what hath already been spoken. But in this present affect the liver doth not always labor under a cold distemper, nor with a penury and stupefaction of spirits. For in this affect the vital blood being sparingly distributed to the outward members, it must needs be superabundantly poured upon the bowels, especially the brain and the liver ; and seeing this blood, which is circulated thorow the bowels so neer the heart, is made very hot and full of spirit : as even now issuing out of the fountain of the vital spirits, it is impossible that it should permit a cold

distemper, or any defect of spirits to be in those parts, which it watereth with so copious an afflux.

Fifthly, In this affect we often behold the face to be well coloured, & the cheeks ruddy, which can scarce happen in a cold distemper of the liver if it be of any continuance.

Sixthly, From a bad habit of breeding blood in the liver; a sufficient reason cannot be rendred of the symptoms proper to this affect, a *Cacotrophy* indeed, or a vitious nourishment, and an *Atrophy*, or a defective nourishment: nay many times and peradventure not unjustly be ascribed to the fault of the liver: but an *Alogotrophy*, or a disproportional nourishment cannot immediately be referred to that bowel, For the liver maketh the blood equally and without difference, for al the parts; neither is it liberal to our part in the dispensation of it, and reserved to another. Moreover the debility of all the muscles, the dislike of exercise, the affectation of rest, seemeth to have no correspondence with the Liver, wherefore neither do we acknowledge the Liver to be the first seat of this disease.

Seventhly, This disease in strong children is cured sometimes, only by exercise, play, stirring, and rubbing of the body; by which means the heat is summoned to the outward parts, new spirits are raised up, the stupefaction of them is chaled away, and the aliment is with a more plentiful benignity drawn to the outward members, which benefits without doubt are more properly accommodated to the outward parts then to the Liver.

And this question being thus solved, we proceed to the other; namely,

Whether the Lungs be the subject of the first Essence of this disease?

The symptoms which seem to perswade the affirmative, are the frequent narrowness of the breast, the difficult-

ficulty of breathing, an *astma*, a cough, the inflammation
 of the Lungs, the hard swellings of the Lungs, the impo-
 stume in the Lungs and the *Prisick*. First, The nar-
 rowness of the breast doth not presently arise from the
 very beginning of the disease, & therefore cannot be attest-
 ed to be of the first Essence of this Disease, in like manner
 the difficulty of breathing & the *astma* do not perpetually
 accompany this affect, and therefore an indication of the
 part first affected cannot be borrowed from them. Third-
 ly, the cough is sometimes present, sometimes absent, and
 is often times variously intended and remitted, til the es-
 sence of the disease persisteth in the same state; which al-
 so happeneth from very many of the aforesaid symp-
 toms. Fourthly, An inflammation of the Lungs doth
 not frequently molest the patient, and when it invadeth
 him, it is an acute and not a chronicle disease; as this,
 whereof we now speak, so that we cannot lawfully con-
 clude any certainty of the first affected part from
 a symptom so unusual and so Fugitive. Fifth-
 ly, Hard swellings of the Lungs, little swellings, impo-
 stumes; yea, and bunches may precede, associate, and
 follow after this affect, but these diseases are altogether
 of a different kind from that we now speak of; yea, and
 are common as well to men of ripe years as to children,
 and infants: moreover the *Prisick* doth not usually su-
 perveen unless after a long continuance of this affect, as
 being far from the first Essence of this Disease; and that
 it may manifestly appear to be very remote from the
 first esteem of it, so that can confer little or nothing to
 the finding out of the part affected. Moreover, those
 inseparable and vulgar symptoms of this Disease, as the
 impotency of the external parts to motion, and the ine-
 quality of nutrition, can by no reason be deduced from
 the affected Lungs: and therefore we cannot admit this

Bowel for the first seat of this Disease. And thus at length we descend to point out the parts first affected.

The special marrow issuing out of the skull doth seem to deserve the first place: The second, all the Nerves produced by it; the third all the membranous and fibrous parts unto which those Nerves are carried along. And in these parts we affirm the first essence of of this disease to be rooted, neither do we think it needful to joyn other parts with these. For the softness, looseness, and *Atony* of the whol Spine without the Skul, of all the Nerves arising from thence, of all the Fibers of the Universal Body, and by that means an inability to motion, a slothfulness and affectation of rest, which bewray themselves from the very beginning of this affect, do abundantly evince these parts to be affected with coldness, defect and benumbedness of Spirits, and from hence it comes to pass that they are extenuated and afflicted with an incompetency of nourishment. For they do somewhat communicate their benumbedness to the tops of the Arteries, whereupon the Flux of blood that is distributed unto them, suffers diminution; and because they are cold and labor under a defect of Spirits, they imperfectly concoct the affused blood, so that there is a necessity that they must be unduly nourished and less than the other parts, and by consequence be extenuated. Therefore we justly and deservedly ascribe the first essence of this Disease to those parts alone.

Yet it may be here doubted whether the bones may not also be numbred among the parts first affected, seeing that certain tumors of the bones may be observed presently after the first invasion of the Disease in divers places, but especially in the appendancies of the Bones to the Wreists and tops of the Ribs, where they are conjoyned

joyned with the grizles of the Stern ?

We answer, That indeed it cannot be denied, but that the said tumors of the bones, both in respect of the encreased greatness, and also by reason of the viciated figure are really and truly Diseases, and therefore we grant that the bones must be referred to the primary or secondary essence of the Disease: but that they do not pertain to the primary essence of the Disease is manifest from hence, Because the said tumors of the bones depend upon the first essence of this Disease, and suppose the preexistence of it. For they spring from the unequal nourishment of the parts which is a Symptom of the first essence of this Disease. But here the inequality of the nourishment can depend upon the first essence of this Disease, shall more fully be declared in its due place; namely, where the reason of the secondary essence is to be rendred. We will only here shew that those swellings of the bones are rightly deduced from the improporionate nourishment, to wit when in respect of the rest it is too much augmented in the swelling parts. That is proved by this argument, Because the protuberant part of the bones are altogether of the same Species with the other parts of the bones; whereupon it is necessary, that they come out by the same way of generation, by which the rest are augmented and encreased. Therefore seeing that the other bones are augmented by nutrition, that is, by the introsumed aliment, and the assimilation of it, certainly we must judg that these bones also acquire their augmentation by the like reason (although without reason, measure and proportion) You will say, That tumors are usually generated not of an alimentory or good, but a corrupt and vicious juyce. True it is indeed that this is for the most part true, but as true it is that it is only for the most part true. For

some tumors swell from a legitimate and alimentary juyce, as caruncles or little pieces of flesh, knobbed swellings, and perhaps some hard bunches, but even these swellings do also differ much from the present standing out of the bones. For those tumors which we use to call excrescences, have somewhat in them without the habit of the part and in the whol kind beside nature: but these tumors do not grow without the habit of the part; neither do they include or contain any other preternatural thing beside the sole magnitude disproportionately encreased, and by that means the viciated figure of the parts. For otherwise these swellings should not be of the same Species with the rest of the Bone, to which they are continued, but that is repugnant to the experience of the senses.

If therefore it be granted that some tumors (even among those which are altogether preternatural and consist without the habit of their body) are generated of alimentary juyces, certainly much less hard is it to be understood that these swellings of the bones are generated and formed of the legitimate matter of the bones, by the inherent nutritive faculty. And this is clearly confirmed by this, because the bones according to their similiary nature are by no means legitimately produced by an illegitimate matter, that is, an indisposed and disagreeable matter to the other similiary bones. *Ex quolibet ligno non fit Mercurius*, Every natural agent disposeth the matter before it can introduce the form. It is necessary also that the matter so disposed be legitimate. Now the matter of the swelling bones is manifestly disposed; for otherwise it could not actually receive the specifical form of a bone. Moreover that these tumors of the bones are generated by the nutritive faculty is likewise evident, becaus in all our body there is
not

not any other official vertue besides that nutritive Faculty inherent in the bones themselves, because also these tumors are generated and augmented by the introduced aliment, and assimilated by the bones themselves: although perhaps in respect of the whole Bone this reception of the aliment may be unequal, and a sufficient cause of error in the nutritive faculty, whereby one part of those Bones may be too sparingly nourished, and another part too plentifully even to a tumor.



CHAP. VII.

Of the Secondary Essence of this Disease.

✱:✱:✱ He first and Radical Essence of this Disease,
 ✱ T ✱ and also the parts first affected being explained,
 ✱ ✱ ✱ now in the next place the Secondary Essence; namely that which immediatly followeth this Disease, offereth it self to our examination. And here we must refresh the memory by an intimation of that threefold Constitution already asserted, the Natural, the Vital, the Animal, and thorow these particular Constitutions, shall our examination proceed. And first we will consider the Natural Constitution. This as we have taught above consisteth in the *Temperament*, common qualites, the plenty and disposition of the Natural Spirits, in the Organization, and continuity: now we have already proved, that the first Essence of this affect is radicared in the *Temperament*, and in the plenty and disposition of the Natural Spirits: but the other
 Parts

parts of this Constitution, to wit, the common qualities, the Organization, and the continuity do yet remain to be examined.

By *Common Qualities* we understand in a manner the same which some others have called the *Modos Materiae*, and others, *Qualitates Secundas*. Now we call them *Common*, because they are not restrained to any one Element or Form; but in some sort may expiate and range thorow all the Bodies, and for the most part affect them more or less. Of this sort are density, rarity, consistence, fluidness, tenacity, friability, laxity, tension, (or rather tensity, that the habit may be distinguished from the action) witheredness, swelling; and stiffness, softness, hardness, smoothness, roughness. But it is not our meaning, exactly to reckon up all and each of the *Common Qualities*, nor to prosecute those already rehearsed; further then the present occasion shall require.

The *Tone* or *Harmony* of the Parts doth seem to result from some *Common Qualities* mutually embraced among themselves. For the *Tone* of the Parts properly consisteth in a due tenor and mediocrity between certain opposite *Common Qualities*, as between thickness and thinness, &c. But if there be a recess or departure from the just mediocrity to either of the extremes, then there is a necessity that the *Tone* must be vitiated. Two things therefore do here seem to be enquired after concerning the *Tone* of the Parts; the first, whether in this Disease the *Tone* of the Parts be in any degree vitiated. The next, Whether those faults of the *Tone* do belong to the secondary Essence of the Disease.

As concerning the first, It will be unnecessary to run thorow the particular Parts of the *Tone* severally, it will be sufficient to examine those that seem guilty of the suspected crime.

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First, Therefore we meet with an evident looseness of the *Tone* in this affect: But this looseness differeth both from the infirm coherence, and likewise from the *Paralytical* resolution of the Parts: for the infirm coherence or weakened stiffness of the part is easily made an occasion of the looseness, because in such cases the Part can scarce be stretched forth; but a part may at the same time be both loose, and likewise sufficiently stiff, as may be seen in the strings of Instruments, which if you wind down the pins, they become loose, although in the mean time they forgo not the tenacity of their substance. And in dissected bodies we have frequently observed the loose parts themselves to be sufficiently stiff; yea, and that sometimes in this affect. Wherefore this looseness is a distinct quality from the vitiated stiffness of a Part. Neither doth it less differ from that resolution of the Parts which happeneth in the *Paralytical* Members. For the dead Palsy first consisteth in the depraved Animal Constitution: But this looseness is rooted in the Natural Constitution. For here is no Palsy present either in respect of motion, or in respect of the sense of the Parts: Neither is the Brayn in this Disease primarily affected, as we have already demonstrated. Moreover that there is such an exceeding looseness of the Parts first affected, in this Disease is a thing so conspicuous, that we judge it a superfluous employment to offer proof thereof. For it is obvious to the very senses, and therefore we have listed it among the signs of the Disease. For whether it be a Part of the Essence or not a Part, if it be manifestly subjected to the Senses, it acquireth the propriety of a sign in respect of the other Parts of the Essence, which are removed from the Senses.

Secondly, In this Disease there is not only a looseness but likewise a witheredness, and feebleness. Now this quality

quality comprehendeth somewhat more then the meer and simple loosness; for it denoteth withal a certain emptiness of the parts, whereby they sink down of themselves. Now such an emptiness, and such a falling down of the Parts first affected in this Disease are so obvious to the Senses, that there is no need of further proof.

Thirdly, A softness also may be named in the *Tone* of the Parts first affected in this Disease. For sometimes it so falleth out that there is no coincidence between the softness and the aforesaid qualities; but that it includeth or excludeth some other thing, as in a suppurated Tumor there is softness, but without any laxity of the *Tone*, any emptiness or subsidence. For in this present supposed case the softness chiefly dependeth upon the manner of Termination, and the tenacity of the Part being vitiated. But in this affect there is for the most part a coincidence with the laxity and flaccidity before mentioned: So that it is needless to distinguish it more accurately then by the name only.

Fourthly, There happeneth also another fault in the *Tone* of the Parts first affected in this Disease, and this is an extream inward slipperiness. Some perhaps may wonder what the meaning of these words may be, *Internal lubricity*. We confess indeed that for want of words we have been constrained to joyn this appellation. For when in nature such a quality as hath a true existence hath by the oversight of Philosophers, and also the neglect of Grammarians wanted a name, we have taken so much liberty to our selves, as in respect of the great vicinity which it hath with the superficial lubricity of the body to give it the same Name, with the distinctive *Epethite* of Internal. In natural bodies therefore we acknowledge a twofold lubricity; one External and Superficial which indeed consisteth in the smoothness and equality of the
Parts

Parts of the Superficies, by reason whereof the Subject of it doth easily slide by other bodies which it lighteth upon without much attrition and resistance, Now contrary to this lubricity, is the Superficial roughness: but these two qualities have no reference to this place, because they are Organical, neither do they any way belong to the *Tone* of the Parts. That other lubricity whereof we began to make mention, consists in that internal, profound and similiary smoothness, and equality of the body. By reason wherof, the whole substance of its Subject doth easily slide by the other introsubient bodies without much attrition and resistance. And to this lubricity also there is an Internal roughness. Now that there is such an internal similiary slipperiness, and such a roughness also opposite unto it may be shewed almost by innumerable instances. For almost all mucilaginous substances are slippery, and that not only in respect of the outward Superficies, but also inwardly, and in respect of the universal Substance, and every particle thereof; so that, according to the definition of a similiary body, every particle, by reason of this quality is made like unto the whol, and therefore this quality is internal, and similiary, and diffused through the whol internal substance of the Subject. In like manner such an internal roughness may be observed in unripe fruits, extended thorow their whole substance and Internal flesh. But when they have attained to a just ripeness then usually, in the room of that roughness there succeedeth such a slipperiness as we have now described. And here it must be observed, that if these bodies internally slippery be besmeared or daubed upon the Superficies of bodies otherwise rough, they bequeath a certain degree of lubricity to them, for the time they adhere; in like manner being inwardly taken as the slip-

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pery juyces, and mucilages of *Althea*, &c. They do communicate a certain lubricity to the Internal passages of the Body; yea, and not only to the passages that relate to the inward cavities, but also more or less to the very Similary substance of the parts of the Body, which also the blood washeth being impregnated with that slippery juyce.

But this internal lubricity is manifold: oily or fat, watrish, spiritous, saltish, and perhaps earthy. The oily is chiefly conspicuous in the fat of Creatures, especially such as are yong, and in many expressed Oyls, especially the moister and colder, and also the temperate; as may be observed in the Oyls of Poppy Seeds, Pippin Seeds, the four greater Cold Seeds, Time Seed, and the Oyl of sweet Almonds, and the like. A watrish lubricity is in some measure found in simple water it self, although by reason of the fluidness it is less sensible; also this lubricity may most evidently be taken notice of in the mucilages, &c. The Spiritous perhaps doth never happen alone, but it is most frequently mixt with the watrish, as in the sperm of almost all Creatures, and ripe fruits. The Saltish likewise is rarely simple, although there is a man that contendeth it is to be found in salt of Tartar. But the compound saltish lubricity is frequently obvious, as in Soap and Salt of Tartar dissolved with watrish and oily substances. The Earthy (even mixt) is scarce worthy of observation, unless it be in respect that it concurrerth to the thickning of fluid bodies, as in white clayish Mud, and Fullers Earth dissolved. But in this place we have regard chiefly to that lubricity which is watrish, as being that alone which can be guilty of the crime in this affect we now handle,

And these things may suffice in general of the internal
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nal or similiary lubricity. The next enquiring must be whether the first affected parts of this Disease be affected beyond a due proportion with an internal or similiary lubricity. And at first indeed it seemeth very probable that there is such an extream lubricity in the said parts, becaus moisture doth superabound in them, which ever favoreth the said lubricity, be it conjoyned either with heat or cold. Every one knoweth that the Sperm of Creatures by how much it is moister than the creatures produced by it, by so much also it is the more slippery: in like manner that the yong flesh of Creatures is more slippery than that of old. Seeing therefore that humidity and lubricity of this kind are so inwardly converted: Seing also that in the parts first affected there is manifestly an extream humidity, certainly it may easily be granted that a lubricity likewise doth too much abound in the said parts. And to the production of this the benumbedness of those parts have no small share. For the Spirits when they are in their exaltation contract a kind of acrimony and sharpness, as may be seen by comparing Must with old Wine, or with Spirit of Wine or with *Aqua vitæ*. For the Spirits of Must may truly be said to be benumbed or stupified, if they be compared with the Spirits of old Wine; and by how much more they are stupified, so much more lubricity they likewise contain, and also so much the less of sharpness and acrimony. From whence it is manifest that that benumbedness and dulness in the Spirits lodging in the first affected parts doth favor that extrem lubricity; for that dulness of the Spirits in the said parts is almost of the same degree with the dulness of the Spirits in Must. And becaus the Spirits are defective in the parts first affected, it is evident that this lubricity is an over-watrish lubricity. Moreover, laxity, flaccidity, and

and softness do also seem to conspire. For unripe fruit as they are hard, so till they wax ripe they grow softer and softer, and withal acquire an internal lubricity; in like manner the parts are loosned by relaxant baths, and together they become more slippery; also slippery things taken inwardly, as the mucilage of *Althea*, &c. Do not only loosen the Parts, but they also make the passages slippery, for which case in the pains of the stone they are drank with good juices. Again, this lubricity of the first affected parts, seemeth to be much confirmed by this, because in the dissected Bodies a manifest lubricity is observable by the touch; and if they be squeezed a mucilaginous kind of blood, inwardly besmearing them, is crushed out with the fingers. We say nothing of the skin, which for the most part is slippery in this affect, and is seldom felt to be rough to the touch: but it is worthy to be noted, that extream slippery Medicines either outwardly applyed, or inwardly taken, do usually more hurt then good in this Disease. And thus we absolve the former question, of the manner whereby the *Tone* of the Parts is vitiated in this Affect. The other now presents it self to our consideration.

Whether the Tone vitiated after that manner as hath been said, be a Part of the Essence of this Disease?

We suppose here that whatsoever is found to be vitiated in the Body, is either a morbifical cause, or a Symptom, or the Disease it self; and therefore this Disease either simple or compound, or any part of a compound, and that either primary or secondary.

We say first, That the vitiated *Tone* above propounded is not properly a cause of the Disease. And this scarce need any proof. For the said *Tone* is a preternatural Constitution, rooted in the Parts themselves, and by that reason it is most evidently distinguished from a morbi-

morbifical cause properly so called. For although, one Disease may be the cause of another, nevertheless even then it is not properly called a morbifical cause, but a primary Disease, and that other which it produceth, a secondary affect. But every where there is a growing together of them both into one total Disease, the former wil be the primary Part of the Essence, and the latter the secondary part of the Essence.

Secondly, We affirm, that the described *Tone* of the Parts is not a meer Symptom, for it is not under the things secured and retained, neither can it be comprehended under any depraved action, or any changed quality, not vitiating the action. But that the vitiated *Tone* is not comprehended under the things secured and retained, nor under any depraved action, may by the same labor be proved by this Reason, because those kind of Symptoms are not indeed Constitutions of the body; but the said vitiated *Tone* without controversy is a preternatural changed constitution, as we have already most playnly demonstrated. Secondly, That the said *Tone* vitiated after that manner, is not contained under any changed quality, not depraving the action, is so clear and evident, that it needs no proof. For laxity and flaccidity hurteeth the motion of the Parts, and an extreame lubricity is an impediment to the due quickning of the vital Spirits, as shal hereafter be made manifest.

It may be Objected, That some bare changed qualities which are comprehended under the Genus of Symptoms, may also vitiate an action: as the colour changed in the skin yeeldeth an unpleasant prospect to the beholder, so that it begetteth deformity and defect of due comeliness?

We answer, That the changed colour of the Skin in as much as it vitiateth the beauty thereof (which is the proper action of the Skin) doth in rigor (in a large

acceptation) fall under the Notion of a Disease. But seeing this action of the Skin is only *Objecture* and *Ad extra*, and seeing that altered color doth hurt no Internal action of that individual: Physicians, who in the definition of a Disease, have respect only to the Internal actions of that individual, do usually exclude it from the Classis of Diseases. Or if the vitiated color of a part do chance in some place to deprave an internal action (which is known only to happen in the Tunicle of the Eye, called *Cornea*) the best Physicians do ever reckon it for a Disease, although perhaps secondarily. But that we may return into the way from whence we have a little erred: seeing that the vitiated *Tone* may hurt, as we have said, the internal actions, it doth not properly belong to that kind of Symptom, which is wont to be called by the name of a changed quality.

Thirdly we say, That this vitiated *Tone*, seeing it is neither a Morbifical cause, nor a Symptom, and yet is something preternatural, must needs be the Disease it self. Moreover, the same is clearly proved by the very definition of a Disease. For this vitiated *Tone* is a preternatural Constitution, primarily or immediately hurting the internal action; therefore it is a Disease. For to what the definition is competent, to that also the thing defined is competent. That it is a preternatural Constitution is manifest by this, because it is inherent in the solid parts of the body: that it likewise depraveth the Internal actions, is manifest from hence, because an extreme laxity, lubricity, and flaccidity of the parts being granted, presently the agility is weakened, no other cause approaching, and a certain sluggishness deadeth the irritation of the vital Spirits. In agility, the matter is plain, seeing that firm and stretched bodies, other things being answerable are more active, and so on the contrary:

trary : that the same thing also happeneth in the dulness of the irritation shal be shewed in its place, for the present we labor to prove no other thing then that the vitiated *Tone* in this affect is a Disease.

We say fourthly, That this vitiated *Tone* in this Disease is not any simple affect, having an existence apart by it self, but that it is so conjoynd and compounded in those same parts with the primary Essence, that the whole Essence of the Disease (wherof we dispute) may be said to consist of many Diseases united together (in themselves indeed simple, if they be considered asunder) and therefore that the vitiated *Tone* is only a part of the whol Disease. And this needeth no other proof, then because the first Essence proposed above, and the said vitiated *Tone* are both found in those same parts. For that is properly called a compound Disease, which is produced by many simple Diseases conjoynd in the same Part.

Fifthly, We affirm that the vitiated *Tone* is not only a part of the whole Essence, but such a part as hath some dependance upon the primary Essence, and therefore that it is a secondary part of the Essence.

Before we proceed to the proof of this Proposition two grants or concessions are to be premised.

We grant first, That the said *Tone* may be even immediately vitiated in other causes perhaps, and likewise by other causes, although that happen not in this present Disease. For the inherent *Tone* of the Parts may be primarily loosned in the Animal Constitution, and that suddenly, as may be observed in the *dead Palsy*. For the natural tensility (and not the Animal only) of the *Paralytical* member is loosned, and indeed suddenly without any conspicuous intervention of any part of the aforesaid primary Essence. After the same manner in a *Lipthymy*

or defection of the mind, looseness and languishing suddenly attacheth al the parts. Now we cannot in either of these two causes refer the cause of the looseness to the cold and moist distemper of the natural Constitution, seeing that cannot be so suddenly and so sensibly changed. Which let them consider (that we may give warning of it by the way) who wil have these common qualities to be always second and dependent upon the first alone : yea, on the other side let them in that cause observe how a cold and moist distemper doth afterwards by degree, follow that looseness suddenly introduced. Again, as for the flaccidity of the parts that may be immediately produced by large evacuations, as a flux of the belly, sweatings, and the like immoderate vents, the temperament being not yet considerably changed, although we deny not but this may easily and doth usually follow. Moreover an internal lubricity may be manifestly separated from coldness, though very difficultly from moisture.

Secondly, We grant that in the present Disease, the vitiated *Tone* doth not in any manner depend upon the first admitted Essence, nor that in every respect is subordinate unto it. For first the qualities of the *Tone* here vitiated, do also ow somewhat to common causes, namely to themselves, and also to those that are common, to the first granted Essence. For extream moistening things by one and the same operation are apt to produce both too much moisture, and also looseness. In like manner from violent evacuations, a want of Spirits, and withal a witheredness doth arise. Also from things too too slippery, either outwardly administred, or inwardly taken, or both, an internal lubricity is augmented, together with a moist distemper. For there is so great a connexion of the whole Essence, hitherto propounded with

with the common causes, that there is scarce any thing which doth augment the first essence of the Disease, but at the same time more or less it hath an influence upon the vitiated *Tone*.

These things being granted, We say notwithstanding that in the present affect there is a very great dependance of the vitiated *Tone* upon the first Essence of this Disease; for which respect alone we have here referred the vitiated *Tone* to the secondary Essence. If any list to contend, *That the said Tone in another respect may relate more clearly to the Secondary Essence*, because he may imagine that the primary Essence of every Disease is necessarily similiary and perpetually grounded upon the first qualities alone; or because he may conceive that the qualities wherein the *Tone* consisteth are perpetually secondary, and that they follow the first only (as the shadow doth the Sun) that man may take notice that we purposely decline such questions, least we should straggle into an unwarrantable digression.

It remaineth therefore only that we prove the Dependance of the vitiated *Tone* upon the first Essence of this Disease to be very great, and that we shal do by parts. We wil begin at the laxity. We grant indeed that a laxity may be sometimes suddenly produced, and in that cause a moyst distemper may often follow upon it, Namely, when the laxity primarily dependeth upon the fault either of the Animal or Vital Constitution; but in this Disease, seing that neither the Animal nor the Vital Constitution are primarily affected, there is a necessity that it must flow from other causes. Moreover, such is the condition of laxity and tensity, that they are obnoxious to sudden alterations. For the strings of a Lute may almost in a moment be stretched and loosned again; the same thing likewise from some causes befallerh the Fi-

bers of the Parts, But in this affect the laxity stealeth on by degrees and slowly ; therefore necessary it is that it must begin, be ruled and moderated by some caus leisurely and slowly augmented. Although therefore we granted even now, that the laxity doth own somewhat to the common causes of the Disease ; yet the augmentation therof is chiefly restrained and moderated by the primary Essence of this Disease. For moistning Medicines although they loosen withal, yet they scarce loosen more than they moisten, becaus for the most part they loosen by moistning. Seing therefore that the common causes of this Disease do flow into the Tone, chiefly by the Mediation of the first Essence of this Disease : And seing that neither the Animal nor the Vital Constitution can here supply the vertue of a caus, we may Lawfully infer that the laxity of the Tone doth chiefly depend upon the first Essence of the Disease. This is further confirmed, there is of it self a certain proness and tendency of the Body to be through wet, so that the fibers of the parts must needs be loosned by it : Moreover, the defect of the Spirits and the stupefaction of them doth caus a remission of the Tone by diminishing the vigor of the part. Therefore we may conclude that the Disease, laxity principally dependeth upon the primary Essence of the Disease. As for the flaccidity because it comprehendeth the laxity, it springeth from the same causes as that doth ; but in as much as it includeth also a subsidence and a certain emptiness, it evidently dependeth upon the defect and benumbedness of the inherent Spirits ; the plenty and vigor whereof being augmented the lank and flagging member is easily rendred turgid and swelled. In the *interim* we deny not but that that subsidence doth withal depend upon the extenuation and atrophy of the parts.

Lastly,

Lastly, How the slipperiness doth proceed from these causes is sufficiently manifested by what hath been said above.

That we may at the length put a period to this matter, it may be observed for the higher confirmation of those things already spoken that there is such a strict dependence between the Tone and the first granted Essence, that throughout the whol cure of the Disease they are intended & remitted together almost in equal pace. For at first the Children that are afflicted with this affect; do only go slowly & leisurely whilst the Tone of the parts is yet but a little loosned; but in the progress they scarce and with much ado trust to their feet, then they play only sitting or as they are carried about. Afterwards they can scarce sit upright; and at the last when the Disease hath attained the highest exaltation, the feeble neck cannot without much difficulty support the burden of the head; all which things as they attest the primary Essence of the Disease to be gradually augmented, so also they make it manifest that the vices of the Tone are intended by an equal pace. And so all these things being rightly weighed, we refer the viciated Tone to the secondary, not the primary Essence of this affect, and by consequence we conclude, indeed the thing that was in question, that that depraved Tone is a secondary part of the Essence of this Disease.

CHAP. VIII.

The Secondary Essence of this Disease in the Vital constitution.

WE have already propounded that part of the Secondary Essence of this Disease which is radicated in the natural constitution, in as much as it comprehendeth the common qualities; it remaineth now that we examin the organical vices, and the faults of continuity, if any such be found out. But seeing that no proper faults of continuity do accur in this affect, and seeing that the organical vices do depend partly upon the Essence above given, and partly upon the vital constitution being viciated, it seems necessary in the next place to search into those faults of the vital constitution.

The vital constitution is aptly distinguished into the original, or that which maketh an influx, and the participative or that which is produced by that influx.

The subject of the original vital constitution are the Spirits themselves excited in the blood of the Arteries. You will say, *The heart rather seemeth to be the subject of this constitution.* But it is not so, for the heart itself through the coronary Arteries receiveth the vital Spirits brought down with the Arterious blood from its left Ventricle. But it is absurd to suppose the wals of the Heart to be the first subject of the vital heat, and in the mean time for those to receiv that heat from the Arteries. We must say therefore that the solid substance
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of the heart is indeed the first & principal subject of his natural and inherent constitution; but seeing that receiveth the Vital Spirits (as hath been said) it cannot be accounted the first subject of the Vital Constitution, which is imprinted in it by those Spirits, and continueth no longer than the substance of the Heart is shedded and besprinkled with the Vital Spirits. For neither can life subsist in any place without the Vital Spirit. Wherefore the substance of the Heart doth so far participat of the Vital constitution, as it is wash'd and bedew'd with the Vital Spirits, and by Consequence that Constitution in the substance of the heart is not original or influent, but participative or produced by that influx. This is also confirmed in that, becaus the vital heat of the blood in the hollow Parts, or Ventricks of the Heart (which heat is at least a part of the Vital Constitution) is for greater and more intensiv than that which is within the wals of the Heart, as any man may observ by the opening of the Bodyes of living Creatures, the Ventricle of the heart being wounded, and the Finger presently thrust in. For he shall feel a far more augmented heat in the blood, than in the very substance of the *Ventricle*, however it be handled. Moreover the vital Constitution is a thing transient and consisteth (as the Phylosophers Phras is) *in motu & fieri*; therefore it is rooted. In the movable and decaying Spirits (such as the Vitals which are contained in the Arterious Blood) for som Member being cut off, the Life vanisheth almost in a moment, and by Consequence the vital constitution: but the natural (as we have already insinuated) continueth (though not in such an exaltation as when the Vital remaineth) for a while after death. And indeed the Life and the Vital constitution is suddenly taken away in the case aforesaid not by any positiv

positive contrary Cause, But by a meer privation of the Conservant and Continent Cause, This is most evidently confirmed, because the Vital constitution is suddenly intended, remitted and altered in all the parts in respect of the model or measure of the Vital Constitution, excited in the *Ventricles* of the Heart, so in a *Lipothymy*, the heart fainting, the life of the parts presently vanisheth, at last languisheth; but as soon as the *Ventricles* of the heart are refreshed with Spirits by some proper cordial applications, straight way we behold the vital Constitution to be suddenly in some measure repaired in all the Parts. In the suppression of the breath sudden death followeth the torrent of the vital Blood from the right to the left *Ventricle* being intercepted. In the opening of a Vein or in any other immoderate profusion of Blood there happeneth a swooning by the sole defect of the Vital Spirits. Therefore seeing the Vital constitution is transient and fugitive in any of the solid parts, and seeing it dependeth upon the proportion of the vital spirits flowing into them from the *Ventricle* of the heart, we may rightly infer that in the solid parts, it is not original but participative. But in the Vital Spirits themselves, by whose function the Vital constitution is diffused and transmitted into all the Parts, it must necessarily be original: For there is no other original subject of it to be found in the Body.

Yet we grant that the solid substance of the heart by his Natural Constitution (especially being warred by the Vital) is the assistant cause of the excitation of the Vital Spirits in the blood included their *Ventricles*, although it cannot be the first subject of that same Vital Constitution, as we have even now abundantly proved. And these things for the present may suffice in general

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Concerning each vital constitution, the original and the participative, and to prov that that must properly be ascribed to the Vital Spirits, this to the solid Parts as the immediate Subjects of the inherence. Three kind of vices belonging to this Constitution do stil await our examination: The two former wherof relate to the Original: And the third pertaineth to the participative Constitution. The first vice concerneth the Generation of the Vital Spirits. The second hath reference to the distribution of them: And the third appertaineth to the participation of the Vital Constitution. Of these we shal make enquiry in their order.



CH A P. I X.

*The vitiated Generation of the Vital Spirits
in this Affect, and whether that fault be a
Part of that Secondary Essence?*

He *Vital Spirits* are first excited or generated within the Ventricles of the Heart; namely, in the very mass of the Blood, and properly they discriminate the Blood in the Arteries, from that in the veyns, after that they are generated they are cherished and conserved within the cavities of the Arteries, until they are distributed into the habit of the Parts. Yea, they are not only cherished in the Arteries, but in them also rightly disposed, perhaps som new ones are excited, though with less efficacy then in the heart.

This being Preadmonished.

We say first, That in the very Subtance of the heart there

there doth not occur any fault repugnant to the Generation of the *Vital Spirits*, which properly can be a part, even of the secondary Essence of this Disease. For the heart it self, for his doth rightly perform his function in this Disease: and if any imperfection happen in the Generation of the *Vital Spirits*, it cannot be properly ascribed to the heart, but to the ineptitude of the matter, to receive the form of the *Vital Spirits*. As the ingested aliment if it be extremly crude, it may frustrate the perfection of a laudable concoction, the Stomach being otherwise sound and faultless: So the unapt and unprofitable blood exported to the ventricles of the Heart, may render the action thereof imperfect, in respect of the operation and effect, how sound soever it may be in it self: In which case the ascription of the fault is usually and truly attributed to the indisposed matter, and not to the Heart. You wil reply, a Feaver is sometimes complicated with this affect, and at such time the heart doth unaptly Generate the *Vital Spirits*, But that Feaver is a Disease of a different kind, and by no means either the whol or any Part of the Essence of this affect.

Secondly, We affirm that the lesser Arteries inserted into the first affected Parts, are in some degree really cooled and benumbed by them, through their adjacency and contact, and for that caus they do unaptly conserv the *Vital Spirits* contained in them, wherupon the Vital Constitution of them is rendred somewhat imperfect, before they can be effused into the Parts themselvs. And this fault of the little Arteries seemeth by very good right to be ascribed to the Generation of the *vital Spirits*. For although it be not the function of the Arteries to propogate the *Vital Spirits* according to the first signification of the word; yet for this very reason, that

that they are obliged to conserv them when they are propagated, namely by such a conservation as in a manner includeth a certain continue Generation of them, their faults are rightly to be referred to the Generation of the *Vital Spirits*. For the *Vital Constitution* is a certain transient action (as we have shewed before) which, while it lasteth, is in a continual flux and motion, and which like a flame, when the continual fomentation and reparation of it is suspended and suppressed, suddenly extinguished. Therefore are the *Arteries* as a continue Heart to all the parts of the body, unto which they transmit and powr out their contained Spirits; and what faults soever of the Spirits happen before the effusion of them into the habit of the Parts, seeing that they necessarily belong to the Original *Vital Constitution*, and cannot otherwise be ascribed to the distribution of the Spirits, they must be referred to the very Generation of them; namely, a continue Generation in the *Arteries*, wherby they are continually preserved from a sudden extinction.

Moreover, This fault of the *Vital Spirits* is the depravation of the *Vital* and *Original Constitution*, and seeing that it is somewhat preternatural, first hurting the action, from whence the participative constitution, floweth in like manner depraved, and seeing that it meerly dependeth upon the primary Essence aforesaid and is complicated in the same parts, it will be a part of the secondary Essence of this Disease.

Thirdly, We say that the matter of the *Vital Spirits*, to wit the Blood of the *Veins* impregnated with his Natural Spirits returning in his circulation from the first affected parts towards the Heart, is somewhat disabled by them to admit the form of the *Vital Spirit*. For it is necessary that the Blood, whilst it passeth through

through the parts affected with a cold distemper, want and benumbedness of inherent Spirits, must also thereupon affected with some kind of frigidity, benumbedness, and perhaps with a thickness and viscous quality beyond the usual degree of Nature. For as the blood doth give a tincture of his qualities to the parts thorough which it glideth; So on the contrary, the parts themselves bequeath also as much as they can of their qualities to the flowing blood. But here likewise we must grant withal that this indisposition in the parts first affected (especially when it is light and smal) in the return to the inward parts, is very much corrected by their heat, before it ariseth at the *Ventricles* of the heart, nay that it is sometimes subdued or if any such contracted fault remain, it is commonly totally abolished by the length of the journey before the return of the Blood to the left *Ventricle* of the heart, whilst it floweth down by the right, and the substance of the Lungs, the same thing also may be thus confirmed, because if that indisposition should continue till the return of the blood to the left *Ventricle* of the Heart, the whole mass of blood in the Arteries would become crude and imperfect; and seeing that this blood thus abounding with imperfect Vital Spirits should be transmitted from the *Aorta* to all the Parts, it would more or less affect them all; which very rarely is observed in this Disease. For the head, & many bowels, however some of them are found to be greater then ordinary yet they seem to be watered with a perfect Vital Spirit. But although, as we have said, the slight indisposition of the Blood may be corrected, before its return to the right ventricle, yet when the contracted fault is great and more considerable, it cannot be altogether overcome, wherupon the Lungs in this Disease are commonly afflicted with the most grievous Evil.

vil. For, when the less Spiritous, and therefore the less passable Blood, is continually transmitted thorow the Lungs, cold and thick, or viscous, in process of time it must needs more or less infect and obstruct the weaker parts of the Lungs; from whence proceed difficulty of drawing breath, a stubborn cough, hard tumors, inflammations, impostumes, and the *Ptytick*. Feavers also both *Erratick* and *Hectick*, may from hence derive their Origen. But seeing that fault may be suddenly introduced from the first affected parts, it is credible (although we have said the Lungs are often infected by it) that it is for the most part overcome, before the Blood can com to the left Ventricle. And this may be the reason why the Head and the adjacent parts do look so well and flourishing, namely, becaus neither the Natural nor the Vital Constitution is hurt in them, seeing that the perfect Vital Spirits generated in the left Ventricle, and distributed from thence, do excite that fresh color in the face; when on the contrary the Lungs do oftentimes labor under the faults aforesaid, the viciousness of the Blood not being corrected before it enter the right Ventricle and the Arterious vein.

Moreover, This imperfect production of Vital Spirits in the right Ventricle of the Heart, by reason of the crudeness of the affluent Blood, flowing in the Veins, totally appertaineth to the secondary Essence of this Disease, and must be accounted a part of it: for the Vital Constitution is vitiated, wherupon the actions in the Lungs are depraved, and it dependeth wholly and in every respect upon the primary granted Essence, neither in the mean time, doth it reside in the solid Substance of the Heart, that it should therefore deserv the name of a new disease.

Here we note by the way, That Physicians in the cure
of

of this affect do ever intermingle such things with their remedies as have respect to the benefit of the Lungs; and not without reason, seeing that it is apparent by what hath been said, to how much danger that Bowel is continually subject. And this may suffice concerning the faults in the Generation of the Vital Spirits: Now follow the faults of the distribution of those Spirits.



CH A P. X.

The vitiated Distribution of the Vital Spirits in this Affect, and whether it be a Part of the Secondary Essence therof?

His vitiated distribution seemeth to consist in three things: Namly, in the Diminution, Slowness, and the Inequality of it. The defective, and also the slow distribution of the Blood and Spirits, may be seen in some one Part, and perhaps in all those that are first affected: But the inequality cannot be observed in any one, seeing that it resulteth from a collation of a various swiftness and slowness, greatness and smallness of the torrent of the Blood in respect of the other parts. The defect and slowness of the distribution: seeing that they depend almost upon the same causes in the present affect, they may be handled together, and seeing those differences are more simple then the inequality, the handling of them seemeth deservedly and justly to be premised.

But first we must grant that the passages and circulation

tion of the Blood, thorow the first affected parts is not very difficult in this affect. For although a cold distemper, a want and benumbedness of Spirits, do seem very difficultly to admit a transition of the Blood thorow the parts affected, with these qualities; yet indeed other conjoynd qualities; as moysture, looseness, laxity, flaccidity, softness, and internal lubricity, can at the least contribute as much power to facilitate the passage of it, as the qualities aforesaid can oppose to the interruption of it. Yea, if you valu them by a just estimation, perhaps they can do more, but we wil not in this place assert it, only we flatly deny the difficulty of the circulation to be greater. For, if we may compare hard bodies with soft, low bodies with straight, moist with dry, slippery with rough, we shal easily perceiv that the circulation of the blood is much more quick and expedite in those, then in these. And this is manifest in young Creatures in whom those qualities abound, in such as are new born, although the Heart be very tender, the Arteries less firm, the pulsificative vertu, yet feeble and weak, yet the passing too and fro of the blood are readily and easily exercised; which in those that are older is not accomplished without a stronger pulse, and an indeavor or a kind of labor of the Heart and Arteries. Again, according to the opinion of *Galen* and *Hippocrates*, the Bodies of children are most passible; namely, by reason of their humidity, laxity, and softness. Besides, if we observ the formation of the chicken in the eg, the matter wil be yet more plain. Within few days after the incubation the Heart of the chicken is sensibly and evidently seen to beat, and to begin the circulation of the Blood: but if at the same time we consider the frailty of the Heart it self, and how weak a coherence there is between the parts of it, til in the interim it finisheth the circulation of the blood according

cording to the manner of it, such as it is : we must necessarily grant that in that shapeless lump, moisture, and internal lubricity do expediate and facilitate that motion. Some perhaps may object that in these cited cases the liberty and readiness of the circulation of the blood, depends not so much upon the moisture, softness and slipperiness, as upon the plenty of the inherent Natural Spirits. For in the *Cachexia*, Green sickness, and the dropsy, the flesh is very soft, moist; and perhaps slippery, when in the mean time the transition of the Blood is very difficult. We answer, those Bodies that wax tender and soft by a paucity of inherent Spirits, are less indisposed, and more apt to admit the circulation of the Blood then the other parts. But it is not simply true that such bodies which most abound with Spirits do perpetually obtain the most expedite and unrestrained circulation of the Blood : for the Blood is more easily circulated in Fish, then in Creatures of the Land, as is manifest by the tender and frail Constitution of their Heart, and Arteries ; yet they enjoy a less quantity of Inherent Spirits. But because they live perpetually in the waters, therefore is their flesh more moist and slippery. Whence it most evidently appeareth how effectual the inward lubricity and moisture are to facilitate the passage of the Blood. As for those that are invaded with the Green sickness or afflicted with a *Cachexia*, we grant indeed that the circulation of the Blood is difficult in them, yet not only through a defect of inherent Spirits, but by reason of stubborn obstructions lodging in the whole body. Wherefore it must be granted, notwithstanding the cold distemper, the penury, and stupefaction of the Spirits, which procure a difficulty to the circulation, that such a Mediocrity is imposed upon it, by the moisture, softness, and internal slipperiness, that the passage of the blood

Blood may be reduced to a just, if not an extream facility. But if the moisture, softness, and inward slipperiness be so considerable to effectuate an easie circulation of the Blood, Truly, the distribution of it through the parts first affected seemeth to be expected more swift and not more slow. We answer that the facility of the transition of the Blood is opposed to the slowness of the motion, or to the smalness of the passage. For a swift motion may be slow, and in a smal Channel. But the facility is here opposed to difficulty, striving, and labor, which in this case, if the circulation were difficult, should happen to the Artery in the passage of the Blood. But that the Arteries do undergo some labor in expediting the circulation of the Blood into the first affected parts, shall anon be demonstrated; we only affirm in this place that the facility, of the passage of the Blood doth not sufficiently argue either the swiftness of the motion, nor the widness of the passage. For, two causes do chiefly conspire to hasten the course of the Blood through the habit of the parts. One is the aptitude of the part recipient, or that through which the blood ought to flow; and this cause is meerly passive and slothful: the other is the impulsion of the Heart and Artery, and also of the Arterious Blood con- tending to stretch and dilate it self. This cause is active and full of vivacity. For upon the cessation of this impulsion, the distribution of the Blood will presently after totally cease, however the passage may be otherwise supposed to be most easie, manifest therefore it is that this impulsion is the principal & active cause of the swiftness and slowness, and also of the quantity of the distribution of the Blood. Wherefore those causes which do any way advance or hinder this impulsion, do now come to undergo a more accurate examination.

For by these we shall know whether the distribution of the Blood in the parts first affected, be really more sparing or slow than is meet.

These causes do chiefly concur to excite that impulsion. First, the plenty and activity of the Vital spirits contained in the Blood. Secondly, the perfect soundness of the Heart. Thirdly, The firmitude, heat, and just magnitude of the Arteries. Fourthly, An irritation both of the Heart and Arteries, whether extrinsically or intrinsically caused. These we will run over in their order, that it may appear in what condition they are in this present Disease. First, As for the plenty and activity of the Vital Spirits, we have already shewed that in this affect the imperfect Vital Spirits are frequently excited in the right Ventricle of the Heart. Seing therefore that the Blood tainted with these imperfect Spirits, must be driven into the Lungs, there is a necessity the distribution must there become more sparing and slow by reason of the defect of the Spirits. Again, seeing that the vital blood, as we have also shewed above, is somewhat cooled in the Arteries, which are terminated in the first affected parts, it is necessary likewise that the passage of it through the said parts must be diminished and more dull.

Secondly, The vertue of the Heart, unless peradventure by accident through the complication of some other Disease, is seldom seen to be viciated in this affect.

Thirdly, For so much as concerneth the Arteries, we cannot accuse their condition of any notable defect in reference to their strength. But there is a manifest fault both in their heat and magnitude. First, in their heat, the Arteries inserted into the first affected parts, must necessarily by their cold distemper be somewhat affected with the like distemper. For seing that a distemper

per of the parts first affected is active and permanent, it is unavoidable but they must more or less introduce a like quality into the parts so neerly bordering to one another, For natural agents are busily industrious to assimilate all Bodies placed within the Sphear of their activity, but especially such as are circumambient and neerly adjacent. But if any man doubt whether that coldness of the Arteries can retard and lessen the current of the Blood through the first affected parts, let him consider that frigidiry is of it self an enemy to any kind of motion. For it is the quality of cold by its own Nature to arrest Violences, and impetuous oppositions, to condensate, to induce sloth, to superinduce *Somnolency*, stupefaction, and immobility, and when it attaineth a more intensive degree, to congeal and mortifie the parts. Therefore it must needs cast a *Rémora* to the torrent or the Blood waving through the parts affected with that quality. Besides, In the opening of a Vein we have often observed upon the cooling of the member that the Blood hath flowed more slowly and sparingly, and if the member be warmed again, or the pulse be excited by rubbing or any other motion or means, that then the Blood floweth again with a more plentiful and liberal current. Moreover, the application of cold things is sensibly effectual to stop Blood preternaturally bursting out of any part, as on the contrary, hot things do provoke the ebullition of it.

It may be objected, *That the Pulse is many times affected and intended by the cold outwardly opposed; as by the handling and playing with snow, we see that not only the Pulse but the heat also is augmented in the hands of those that sport themselves with it.*

We answer, Cold things of themselves do alwaies move the passage of the Blood through the habit of the

parts ; but that by accident they may intend the circulation of the Blood, if at length they provoke the pulles of the Arteries (as in the said case of the snow it happneth) to beat stronger marches. But this never comes to pass in this present affect. For (as we have already shewed) the circulation of the Blood in this Diseas, however it may suffer *Immunitior* or *Retardation*, yet it continueth sufficiently easy and expedite, neither doth any irritation of the puls arise from thence, as anon we shal perceiv more plainly. For seing it is manifest by what hath been said, that the Arteries reaching to the first affected parts, become more cold then ordinary, or is meet, we may easily beleev that they become likewise more slender ; so in any cooled member we see the Veins and the Arteries become more slender then they were wont to be ; and it cannot be denyed, but that actual cold doth straighten the Vessels. But it is more then probable that a Potential coldness (such as perhaps that may be said to be which is of an inward distemper) doth likewise make the Veins and Arteries more slender. So we see cold Complexions, and also cold and moist, to have less Veins and Arteries then the hot. Corpulent bodies, women, children, have narrower Vessels, then lean, men, or youths. Besides, the very heat it self is an expansive quality, that it may enlarge the Vessels, and cold a contractive quality, that it may restrain and straiten the Vessels. Finally, one of us observed that upon the dissolution of the Bodies perishing by this affect : He hath somtimes found the Veins, and the Arteries, tending towards the first affected parts to be of an undue slenderness : but that those Arteries called *Carotides*, and the *Jugulary* Veins were disproportionatly amplified ; and in is credible that this might have been perpetually observed, had they that opened the bodies minded it with a
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attentive contemplation. But this we peremptorily affirm not, but leave it to future inquiry : in the interim seeing that it sufficiently appeareth by what hath been said that the circulation of the Blood, in the first affected parts is diminished, it is likewise agreeable to reason, that the Vessels also of those parts are straitned. And seeing that the left Ventricle of the Heart, doth pour so great a quantity into the *Aorta* as may suffice al the parts, and seeing that so many parts primarily affected do sparingly sip, that blood it is very probable that it is distributed with an unusual liberality thorow the other parts, and namely thorow the Head and Liver, and therefore the Vessels of these parts are somewhat dilated and amplified. Concerning the lessned circulation of the Blood in this affect : We ad this experiment only, a ligature being wound about the arm or thighs of a yong boy grievously tormented with this Diseas, the Veins did not so easily swell beyond the ligature, neither did the habit of the part full of Blood appear in that place so swell'd and colored as it usually doth in those that are sound. From whence apparent it is, that the transition of the Blood thorow those parts is more dul and less plentiful, then it ought to be as a river stopped by a dam or wal doth sooner or later overflow the Banks, according to the various swiftness and magnitude of the Torrent : So likewise it happneth here, the retiring of the Blood thorow the Vein, to the inward parts, is intercepted by the force of the ligature, which if it were violent, would in a short time fill the Veins, and the habit of the parts beyond the ligature; as we see it to happen otherwise in sound Persons; but because in this Diseas it filleth them slowly, and very dully, we must conclude that the circulation of the Blood in those parts is extreemly lessened and slow, and that the Arteries inserted into those parts are more cold

cold and slender then they ought to be, as we have most abundantly proved, that the Arteries of the first affected parts are vitiated by a defect of just magnitude.

Fourthly, As for the irritation of the Heart and Arteries (which perhaps is the principle caus of many differences in the pulses) it is manifestly found to be weak and ineffectual in the Arteries of the first affected parts. We purpose not at this time to discourse of the nature, causes, differences and effects of irritation in the pulses ; only we observ in general that it may be either natural or violent ; and that each of them may be universal or particular, and withal may arise either from within or from without. And lastly, that it may be excessive or defective : In the handling of the present Disease it wil suffice to touch upon the particular Irritation of the Arteries, and afterwards to accommodate our Diseases to the present business. 1. Therefore, we affirm that the Arteries impel the Blood into the substance or habit of the parts, by a certain labor and contention; and that the parts which receiv that Blood do make som resistance and opposition : that by reason of this conflict the Arteries are Irritated to make stronger resistances or pulses; and that that Skirmishing is of so great moment to fortify the pulse and render it more vigorous, that when it is weak, the Puls can scarce be strong: but where the contention is somewhat more increased, yet so, that it doth not overcome the opposition of the Arteries, the pulse becomes more strong and lively, provided that no impediment from som other caus doth intervene. This we might illustrate by divers instances, but we wil exemplify it only in a few: in the winter the pulses are more full, hard, strong and constant, then in the summer ; but it is certain that at that time the outward parts of the body being bound up with cold, are more firm and less passable

passable, and therefore that they do more strongly than at other times resist the Blood, contending to pass thorow the substance of them in his circulation; wherupon the Arteries, when no other intervening matter hindreth, must needs move more vigorously, and drive the Blood more forcibly, if they perform their office in perfecting the circulation of the Blood. Hereupon those Arteries are irritated, unless they be totally suppress'd, or by some other means charmed, and by degrees yeeld stronger strokes; and withal the Spiritous Blood being pent in & striving for more room they do wax a little more hot, and are somewhat enlarged, and sometimes having a little triumphed over the subdued opposition, they drive forward the blood into the parts, with a more swift & copious torrent then before. This is further confirmed by the heat augmented by handling snow, for although at the first the Hands wax presently cold, yet in a short time after they grow hot, & withal they are drier & colored with Blood, as the intensiveness of the heat doth justify. For upon the first contrectation or touch of the snow the parts are bound up, and strongly resist the circulation of the Blood, the Arteries also in those parts are at the same time contracted. But, unless the cold prevail to a total suppression of the Spirits contained in those Arteries, and to a stupifying of the Arteries themselves, or at least a benumbedness, those Arteries are by degrees irritated, and the interrupted Blood more forcibly contends for wider room, and so at length by this counter-opposition, the Arteries wax hot and are dilated, and the puls being increased, they extrude the Blood more plentifully into the part before overcooled. On the contrary, in the summer, when less resistance is opposed against the passage of the Blood, the pulse becomes more feeble, more languid, and more soft. From whence it appears

that the defect of a due irritation, proceeding from the weak resistance of the parts which receive the Blood from the Arteries, doth diminish the vigor of the pulses.

Secondly, The same is yet more evidently seen when the Pulse is augmented by the motion of the Body ; for in any violent motion almost all the Muscles are stretched, by reason whereof they somewhat more resist the passage of the Blood ; hereupon the Arteries are provoked to contention, their heat is increased, and therefore more nimble, strong and full Pulses are emitted.

Thirdly, As the inflammation of a part doth sensibly irritate the Arteries thereof, so it exciteeth a more vehement Pulse and causeth a more liberal Flux of the Blood. The same may be said of pain.

Fourthly, Hither also must be referred the bruising of any part. For a bruised part doth difficultly receive the Blood flowing to it : hereupon the Arteries provoked, they beat more strongly, and swell the bruised part resisting them into a tumor. This might be demonstrated by many more examples, but we conceive these to be very sufficient and satisfactory.

Moreover, It must be noted that the parts caused by the reception of the Blood in the Arteries, may be very great, and yet not sufficient effectually to irritate the Arteries ; in which case it rather remitteth and disturbeth them, increaseth, or facilitateth the force of the torrent of the Blood. For that opposition of it self interrupteth the channel of the Blood thorow the substance of the parts ; but because it doth withal irritate the Arteries to emit more lively strokes, it quickneth the torrent of it by accident. Wherefore we are here compelled into another involuntary digression, by dis-
frustrating

stinguishing between the resistance of the part that irritate, and that which doth not, or doth very little irritate the instances already alledged will suffice for the former, and to explain the latter we will add a few.

First, Therefore there is a resistance that totally suppresseth the torrent of the Blood. Such a one is caused by a strong ligature, which doth altogether intercept the pulse in those parts beyond it, neither yet doth it irritate the Arteries on this side of it, because it overcometh all the force of the Artery beyond the Ligature and doth wholly break off the action thereof. The same is seen in the parts mortified with cold, or by other causes corrupted with an inflammation; and perhaps in some hard swellings, contractures and some confirmed wounds.

Secondly, There is a resistance pressing down the Arteries even by the compression of the Arteries, and this happeneth in a ligature indifferently bound. Also in the compression of an Artery by some tumor in the adjacent parts as in a raw swelling; also in a compression from any outward cause, many things which belong to the lying down on the right side especially, and the left are referred hither; so in tumors on the right side, the lying on the left side is many times endured with the least patience by the compression of the sound parts by those that are swelled &c. and this compression however it resisteth the circulation of the Blood, yet it doth not seem much to irritate the Arteries, because it doth no less intercept the very pulsative force, then it diminisheth the action thereof. Although perhaps it may sometimes irritate in the Lungs by reason of their vehement heat, just as it useth to do in aching and inflamed parts.

Thirdly, There is a resistance in part repressing the circulation

circulation of the Blood, but without compression of the Arteries, nor yet totally suppressing them, nor very much irritating the Artery. Such an one occurreth in obstructions caused by cold, slow, thick, and moist humors, which although they may somewhat retard the free passage of the Blood, yet they provoke the Artery very little, because at the same time they superinduce a certain benumbedness in them, at least a cold distemper, as also in the Blood which they contain. The same almost may be said of paralytical members, but that in these a benumbedness is more evidently introduced in their Arteries, and the channel of the Blood is less retarded in them.

Moreover, We affirm secondly that the parts first affected in this Disease do not sufficiently irritate the Arteries, by which the Blood is distributed through them. For although in these parts, both by reason of their solidity, and also in respect of their coldness, we grant some kind of resistance, yet it is extream feeble and slow, and very little provoking. First, because in those parts a moist is conjoynd with the cold distemper, which of it self tempereth and qualifyeth all manner of provocations. Secondly, Because there is a plenty of inherent Spirits, which otherwise, where they abound, are wont to cherish the vigor of the Arteries, and the blood contained in them. Thirdly, Because those parts are loose, weak, and soft, and therefore more prone to receive with facility that which the Arteries send in, than to exasperate them by resistance. And that the Arteries do not convey the Blood by any vigorous and considerable force into these parts, is manifest by this sign, because after the influx of the Spirits, and the Blood they still continue loose, soft and feeble, when on the contrary strong Pulses are wont to render the

the parts otherwise weak, full, swollen, and stiff, on a sudden. Fifthly, because the first affected parts have in them a similiary lubricity. For as the superficial or external lubricity suffereth any thing to pass by, without attitudination: so also the Internal or similiary lubricity facilitates the circulation of the Blood, so that the passage is accomplished with very small opposition. We conclude therefore that the proirritation of the Arteries is in this Disease deficient; and therefore that the Arteries are very dully and ineffectually excited to strengthen the pulse.

Having at the length weighed all things which we propounded concerning the causes which actuate and advance the Blood in his circulation, it sufficiently appeareth, that the circulation of the Blood in this affect is easy and expedit enough, but that it is lessened and passeth dully thorow the parts first affected, both by reason of the sluggishness of the Arterious Blood contained in the Artery of the said parts, and also because of the defective heat, and slenderness of those Arteries; and finally, in regard of their ineffectual irritation. And let these things suffice concerning the two former faults belonging to the distribution of the Blood in this affect, namely, the diminution and slowness thereof. It remaineth in the next place to examine the inequality of that distribution.



. CHAP. XI.

The Inequality of the Distribution of the Blood in this Affect.

His inequality is to be estimated by a comparison of the greatness & swiftness of the current of the Blood, made in divers parts. For if the circulation of the Blood according to a Geometrical proportion be either equally small and slow, or equally great and swift, that must be judged, equal by the scope of the present enquiries: on the contrary, if in some parts it be little and slow, and in others great and swift, that must be reputed unequal and disproportionate. And this is the State of the present disquisition.

It is manifest by what hath been said, That the distribution of the Blood thorow the parts first affected, is extremely sparing and slow: It remaineth therefore only that we consider whether it be transmitted thorow the other parts with a quicker and more plentiful motion.

We have already affirmed that the root of this evil is not fixed in the Heart it self, and that this Bowel of it self is not primarily affected in respect of the left Ventricle thereof. It is credible therefore, that the Heart (unless perhaps some other Disease be conjoynd or supervene) doth rightly execute his function, and expel a sufficient quantity of Blood, for our turn by every stroke into the *Aorta*. Seeing therefore (as hath been already

ready

ready proved) that the Blood is niggardly dispensed from the *Aorta* into the first affected parts, a superfluous portion of it must needs be distributed into other parts not so affected: for otherwise the *Aorta* should not sufficiently discharge it self, nor disburthen the Blood received from the Heart, but it would be obstructed and oppressed with the plenty thereof; and this repletion upon every slight occasion would fly back, even to the left Ventricle of the Heart, and there kindle a Feaver. And we grant indeed, for this very cause, among others, that in this Disease a Feaver is easily and frequently produced. But seeing that the Feaver is another Disease conjoyned, and separable and different from this, and seeing that this Disease very often happneth without a Feaver; it must needs be granted, that by how much more sparingly the Blood is distributed to the first affected parts, by so much the more plentifully conveyed to the other parts, at least in the absence of the Feaver. For seeing that quantity of Blood, as we said even now, is extruded into the *Aorta*, as may suffice the whole Body, and seeing all of it must be distributed into several parts, it most plainly follows, that the less is transmitted into one part, the more is dispensed into another. And thus it may be perceived that the inequality of the distribution of the Blood is inferred from the sole diminution thereof, in the first affected parts above asserted, (at least probably) namely, from the small and slow current of the Blood thorow the parts first affected, there may be rightly collected a more quick and plentiful stream of it, into the inward parts not so affected. Now let us see whether the other appearances relating hither are correspondent to this Discourse.

First, It seemeth manifest by what hath been alleadged, that the Head, the Brain, the Liver, and the other Bowels, are not afflicted with that cold distemper, nor

that stupefaction and penury of inherent Spirits, wherewith the parts primarily affected are oppress'd. For the bowels and the said parts do not receive their Nerves from the Spinal Marrow, without the Skul, but they are involved in the same condition with the other parts. Moreover, those parts, as far as we can judg by the touch are (at least outwardly) moderately hot, and as far as we can guess by the sight they retain their native and flourishing color, besides they are more full and fleshly, then the first affected parts.

Moreover, Children afflicted with this Disease have an indifferently good appetite, they do not ill concoct the antrosumed aliment, and about the Head they retain their senses very acute: they see, they hear, they tast, they smell as subtilly as others, and as for their wit, they many times surpass those of equal years with them; unless an impediment from some other caus. All which things put together do abundantly witness, that a cold distemper, nor a benumbedness or penury of Inherent Spirits, hath none, or at least a very small predominancy in those parts. These things being granted, we must likewise needs grant that a more liberal distribution of the Blood is dispensed to the said parts. For as for the heat, we have already shewed that that doth both amplify and stir up the Arteries to send forth a stronger pulsation; and we have also noted above that the plenty of the Spirits, doth not only cherish the pulsificative force of the Arteries, and conserv the vigor of the Blood contained in them, but that it doth somewhat enliven and excitate both of them, and that by so much the more effectually, by how much the less the inherent Spirits are affected with a stupefaction.

Secondly, unless those parts were watered with a more liberal circulation of the Blood, they would become more soft,

Soft, loof, and feeble, then they are, even as the parts first affected are observed to be. For upon the defect or languishing of the Puls in any part, the part presently becoms loof and weak, as it happneth to al the Parts in a *Lipothymy*. On the contrary, when the Puls bears strongly, the Part wherunto it belongeth, is seen to be somewhat rigid and swelled. For a ful Puls doth presently fil up those parts, which were before sunk down by emptiness; as the *Lypothymy* being driven away, and the Puls being restored, the Parts of the Body, which were before loof and languid, are not only wel colored, but ful of vivacity and turgid: seing therfore that those Parts are not affected with that softness, loofness, and weakness, we must conclude that they are actuated with a full Puls.

Thirdly, The very augmented magnitude of thes parts, in comparison of the parts primarily affected in this Disease doth witness, that they are more liberally fed with their aliment, namly, the Blood, (which is reputed the common and last aliment of the Parts) for otherwise scarce any sufficient reason can be imagined, why, when the first affected Parts are so extenuated, these should be (especially the Brain and Liver) in so good a condition, so ful and so plump. The same thing is confirmed by the lively color of the same parts. For if the Puls languish in any part, somewhat of the fresh and amiable color presently retireth from that Part.

Fourthly, The Arteries called *Carotides*, and the Jugulary Veyn, which belong to the Brayn, and the parts about the Head, are observed to be very broad in this affect; but the Vessels tending to the first affected parts to be unduly slender; from whence we may clearly infer, That the dispensation of the Blood to those Parts is unequal. And here we intreat and beseech those who have

an opportunity to open such Bodies as this affect hath destroyed, that they would accurately contemplate whether the swelling Arteries inserted into the swelling parts of the Bones do more liberally, and more commodiously transmit the Blood into those, than into the other less nourished parts of the Bones, and whether the Arteries of those parts are more broad than of these. Although indeed we confess that this enquiry is most difficult, both because of the slenderness of those Arteries, and in regard of the obscurity of their insertion, and also in respect of the hardness of the Bones.

Fifthly, Hither also belong things hurtful and helpful for children afflicted with this Disease are manifestly benefitted by rubbings, motion, and various agitation of the Body, by exercises, strengthening Oynments, and the like means which raise the heat in the Members on the right-side, and the other parts primarily affected, and irritate the Pulses and augment them after any sort, whereby the distribution of the Blood may be more nearly reduced to some equality; with the contrary things they are damnified. In like manner such Medicines which promote the dispensation of the Blood to the first affected parts (as those which are moderately hot, benign and familiar to Nature, and so attenuant, incident, and deobstruent that at the same time they do not in the least degree wast but cherish and augment the Spirits) help very much towards the cure of this Disease; the contraries do either produce or foment it being produced. All these things being considered we must conclude that the distribution of the Blood in this affect is irregular and unequal. And thus at length we have finished the disquisition of the faults in the distribution of the Vital Blood; we now proceed to the exami-

examination of the faults, if any such there be, of the
Vital participative Constitution in this Disease.



CHAP. XII.

The faults of the Vital participative Constitution in this Affect.

WE have already said that the Origine of the
Vital Constitution is grounded in the Ar-
terious Blood, and especially in the spiritous
part thereof: but because the solid parts also
do somewhat truly participate the nature of Life we just-
ly ascribe unto them the Vital participative Constitu-
tion.

Now this Constitution consisteth in Three
Things.

First, In a certain union of the Arterious Blood
with the substance of the solid parts through which it
passeth.

Secondly, In the Vital heat excited in those
parts.

Thirdly, In the enlivening and exaltation of the
Natural Constitution, and of all the Natural faculties
of those parts.

First, As for that union of the Arterious Blood, it
must be justly reputed, the first part of the participative
Life. For the solid parts are therefore said to partici-
pate of the Nature of Life, or the Vital Constitution,
because the Vital Spirits are contained in them. For

Life cannot consist without a Vital Spirit. Therefore when the Vital Spirit is distributed in and with the Arterious Blood to the solid parts through the Arteries, and these parts do suck in that Blood into their substance, it comes to pass, that the said parts are counited with the Vital Spirits, and so they participate of the Nature of Life.

Moreover, Seeing this union is not permanent but transient and consisteth in motion, it seemeth to consist in the confluence and mutual embracement of the inherent natural and influent Vital Spirit : but the conditions which are requisite to make this a natural concurrence, are,

First, That it be in all respects, moderate, and not impetuous.

Secondly, That it be in all respects strong, and not feeble and stupified.

Thirdly, That it be friendly and peaceable, not hostile and Turbulent, that it be gentle not tumultuous ; that it be neither too slippery and smooth, nor too rough.

Fourthly, That it end not in any kind of dissipation of the Spirits, but rather in the appeasing and apt disposition of them for their return into the Veins. More such conditions might perhaps be added ; but because they very little belong to this Disease, we shall here superceed any further examination of them. We only note that the mutual concurrence and union of the Vital and natural Constitution by their Spirits, doth not occur in this affect, with that activity, vigor and complacency, as it usually doth in sound Bodies. And this scarce needeth any proof, seeing that it is manifest by what hath been said above, that not only the natural constitution of the first affected Parts doth labor under a cold

cold and a moist distemper, a defect and benumbedness of Spirits, but that the Vital Blood it self is also somewhat damped and stupified in the tops or ends of the Arteries, before it can be conveighed into the first affected parts, so that that union must needs be performed without either a sufficient vivacity, or pleasure. For when the vigorous Vital Spirits do meet together with the Natural Spirits no less vigorous, they are united with a kind of courteous strife and delightful contention. Whether, that we may illustrate this matter by an example, the natural Spirits as a Bride do here allure and in a manner repel the Vital Spirits who as it were act the part of a Bridegroom: But the Vital Spirits provoked with their heat, and driven on by the vigor of the Pulses do more confidently invade the Natural Spirits and penetrate into their confines and regions, whilst the Natural Spirits in the mean time (however as it were with modest resistances repulsing the assault) receive them at length not without a certain pleasure. For the very corporal pleasure is established upon, and encreased by a kind of amorous strife, and the principal part of Life it self consisteth in such a contention about the *Reciprocal* union of the Spirits; for to that end the Vital Spirits are both generated and distributed, that at length they may pass through the solid Natural Constitution of the Parts, and may profoundly imbue them with their vital power and virtue; but seeing this peneration cannot be effected without endeavor and resistance, it must needs be, that the vigor of that contention & resistance, be either more or less according to their copiousness, vivacity, and heat of those Spirits that maintain the conflict. Therefore because in this affect, both the Natural and the Vital Spirits are more cold, fewer, and less active; their

concourse and union must needs be dull and undelightful. Moreover it must be noted in this affect (which also we have shewed above) that the permeation of the Blood thorow the first affected parts is to easy and slippery, wherupon even for this reason, that concourse and union of the Spirits in those parts is rendred more slothful, and less pleasant. Besides, hot exhalations although for the most part they are sparingly raised in this affect, yet being raised, by reason of the softness, looseness, and internal lubricity of the first affected parts, parts, they evaporate sooner then is meet, wherupon they leave those parts cold and feeble.

Secondly, As for the Vital heat communicated to the solid parts (which is the second part of the Vital participative Constitution) that partly depends upon the aforesaid union, or the Incorporation of the Arterious Blood, with the solid parts ; but partly it consisteth in a certain expansive motion or endeavor (like to that expansive endeavor of the Arterious Blood) excited in the very solid parts. The first is very perspicuous, for the Arterious Blood through the impregnation of the Vital heat, when it is received into the solid parts, must needs with their substance communicate their heat also unto them. The second is likewise proved without difficulty. For if the Vital heat radicated in the Arterious Blood consisteth in a certain motion or endeavor of that Blood uniformly diffused and withal at the same time somewhat restrained, it must unavoidably excite the same motion in the solid parts thorow which it passeth, seeing that natural causes do always act to the extremity of their power, and as much as is possible by way of assimilation. If any man doubt whether the Essence of the Vital heat consist in such an uniform diffusive motion, moderately restrained and intrinsically advancing: let him know that
the

the Essence of heat doth in general consist in motion or a rarefactive endeavor somewhat interrupted, as *Sr. Thomas Bacon* doth most clearly demonstrate in his *Novum Organum*. But this I say, the Vital heat, being that it containeth in it self the true nature of heat, it will be also necessarily such a rarefactive endeavor somewhat restrained. But that this heat may be restrained to the Vital; more conditions must be added, which nevertheless we cannot in this place either reckon up, or accurately search into, least we should run into an unreasonable digression: In the *interim* that we may have the matter, and the manner of enquiring, whether or no in this affect the Vital heat be moderated according to nature, it seemed good unto us, to propound these subsequent conditions.

First, That the Vital heat may be called Natural, or according to Nature, it is requisite that the Origin thereof be Internal; Namly, in the Arterious Blood, and that it be derived to the solid parts, as hath been said, by the implantation and union thereof; for that any thing may be called, Natural, it must needs flow from an Internal Principle, although it be likewise true that what things soever do moderately cherish, augment, and excite that Internal Principle, may in that respect deserve this appellation.

Secondly, It is required, that that heat be moderate, not unequally, remiss, or intensive, but communicated to the parts, in an even degree.

Thirdly, It is required, that it be in some measure uniform, and like it self in those parts, that rejoyce in the same similiary constitution, provided, that they be equidistant from the fountain of heat, and after the same manner affected by some other concurrent and adjacent causes. But in the parts further distant from the fountain

tain of heat ; yet otherwise, as hath been said, after the same manner affected, that it may be uniformly diminished . And in like manner in the colder parts in respect of the inherent constitution, that it may be also proportionably more remiss. Lastly, In the parts diversly affected by other causes, so that one may be much more intensively hot then another : it is requisite, that between the hotter and the colder part there be found a heat gradually, and as it were uniformly more remiss (if you proceed gently from the hotter towards the colder part.) And even a certain uniformity may be observed in this deformity or disparity of heat, so long as it continueth within the bounds of Nature. For the parts immediately and intermutually touching one another, are in a preternatural capacity, or condition : If one of them be extremely hot in comparison of the other. For seeing that this Vital heat consisteth in a rarefactive endeavor somewhat restrained, if it be very unequal and disproportionate in the Parts bordering upon one another, it will happen, that that part which endeavoreth with vehemence, doth withal endeavor to separate it self, from that which useth no such vehemence, and so that it wil become a preternatural endeavor, causing pain : for pain consisteth in the solution of continuity, not yet made, but to be made.

Fourthly, That this heat may not actuate or assist the action of any other hurtful conjoynd quality whatsoever. For although in this case the conjoynd hurtful quality is chiefly peccant, and meriteth the greater part of blame, yet cannot the heat be altogether excused. For an acrimonious and malignant heat, denoteth other qualities to be conjoynd besides the bare heat, yet the Vital heat it self, in as much as it exasperateth and provoketh the activity of those conjoynd qualities to a more potent

potent depravation and annoyance, it must be judge'd partly culpable of their vicious actions.

Fifthly, On the part of the resistance moderation is also required, both in respect of the appeasing of the irritated Vital Spirit, and also in regard of the passage of the Arterious Blood, and finally in respect of the transpiration of the unappeased exhalations.

Sixthly, A certain proportion must be observed between the expansive endeavor of the Vital heat, and the resistance that restrains it, an excess therefore in either of them in it self is not a fault, but if one be disproportionate to another, in that regard it must be reputed faulty.

Seventhly, A certain harmony and order is observable both in the endeavor, and in the resistance. For they do not always proceed in one form and continuati-on, but as it were fighting, they are sometimes intended, sometimes remitted. And indeed they are chiefly increased in the *Diastole* of the Arteries, wher the blood not being contained in his Marrow Vessels, strugleth for more room, and so stretcheth the Arteries, til a competent portion of it falleth down, into the habit of the parts, and is there digested; for then the place doth not compel the Blood into such straights, but after a short time it desisteth from that impetuosity, and among the causes of the pulsation this motion of the Blood is not the least considerable. Now that we may apply these things to the present business, amongst all the conditions now propos'd, the second alone seemeth manifestly to be desired in this affect. For the Vital heat is not here moderate, but defective and more remis than the just and Natural Degree. For seeing that the first affected parts are besieged with a cold and moist distemper,

per, and with a penury and benumbedness of Spirits, they must necessarily (as we have already demonstrated) somewhat rebate the heat of the Arterious Blood before it is transmitted into the substance of them; whereupon those parts participate a more remiss degree of Vital heat, than is due unto them. And this shall suffice concerning the communication of the Vital heat to the Parts.

Thirdly, As for the last part of the participative Life, which indeed dependeth upon the two former, and which is the first in the intention, though the last in the execution of Nature; we say, that it is in some sort the end both of the Original Vital Constitution, and also of the distribution thereof, and finally of the aforesaid union and heat communicated to the parts. For the Vital Spirits are not excited in the Arterious Blood for their own sakes alone, neither are they distributed into the parts, and united to them, only for their own advantage; but chiefly, that they may enliven and dignifie the inherent constitution of the solid Parts, and so actuate and promote their faculties. For as the heat of it self is only potentially visible, unless it be irradiated with light, so those inherent faculties of attracting, retaining, concocting, secreving, and forming, are dead as it were and meerly potential, when they are deprived of the vivification and erogation of the Vital afflux, This is most clearly conspicuous in a lipothymy; for upon the defect of the Vital influx, all those faculties suddenly fail, decay, languish. But seeing all the faculties are established upon some constitution, which is both the cause and subject of them, it might be demanded in which Constitution of the parts it is grounded? We answer, in respect of the potential Nature they are radicated in the Natural Constitution

tion which we have before described ; but that in reference to the Actuated and Elivened Essence that they depend likewise upon the Vital influx. And we declare in general that the participative Vital Constitution, which we have already asserted to consist in Three things, conjoynd with the Natural Constitution, is the total and adequate, both cause and subject of all those faculties. But it would be a tedious degression, and inconsistent with our purpose, to make enquiry how those Constitutions can produce this or that faculty determinate in its Species. For the present we will only run over those faults of the faculties aforesaid which occur in this affect.

First, The fashioning vertue here erreth by an unequal purging out of the Vital Blood in divers parts, as we have discoursed above. Hereupon the Head and the Liver grow to an unmeasurable bigness ; the first affected parts are extenuated, the ends of the Bones stick out, and sometimes the Bones themselves, which are otherwise straight, wax crooked.

Secondly, The Concoctive faculty is weak in this Disease and in the first affected part by reason of the inherent cold distemper, the penury and benumbedness of the Spirits, the brittle and slippery union of the Vital spirits with the Natural Constitution, and by reason of the feeble imprinted Vital heat.

Thirdly, The Attractive, Retentive, and Expulsive Faculties, seem not to recede much from their Natural Condition ; yet the Attractive is somewhat more slow than ought to be ; the Retentive, by reason of the internal lubricity is somewhat weaker, and the Expulsive is more vehement for the same Cause.

And thus at length we have dispatched the faithful examination of the faults of the Vital Constitution in this

this affect. The Animal Constitution should now undergo the next disquisition, but that som faults of the Natural Constitution; namely the Organical faults thereof, which have some dependance upon some of the recited faults; of the Vital Constitution, do challenge this place, as most proper to themselves.



CH A P. XIII.

The Organical Faults of the Natural Constitution in this Affect,

Being that the Organical faults in this Disease belong to the Inherent Constitution of the parts, thof indeed by the Law of just Method should be immediatly after the similiary vices of the same Constitution; but as we have noted above, the Reason and Cause of them must be derived from the faults of the Vital Constitution lately mentioned, and therefore we are constrained to premise the examination of these, and to resery the consideration of the other for another place.

The Organical faults in this affect are fitly reduced to these Heads.

First, To the extenuation and leanness of certain parts namely, the parts first affected.

Secondly, To the unreasonably augmented magnitude of some parts, as the Brain, the whol Head, and the Liver.

Thirdly, To the tumors for lanching out of certain bones,

Bones, as of the Bones to the Wrefts, to the Ankles, and the ends of the ribs.

Fourthly, To the bowing of certain Bones, as it frequently happneth to the Bones of the Cubit, and the Shin Bone; somtimes to the Bone of the Thigh and Sholder.

Fifthly, To the poynted figure and narrowness of the breast.

And these faults are reckoned beneath among the Symptoms and signs of the Diseas, not because they are indeed meer Symptoms, but becaus they are obvious to the Senses, and so do fitly supply the place of signs, both in respect of the parts of the Essence of the Diseas more deeply retired, and also in respect of the hidden causes therof. For whatsoever is perceived by the sens, and besides it self representeth somewhat els to the understanding that is obscure, hath the formality of a sign. For indeed these faults are parts of the secondary Essence of the Diseas, seing that they are the vitious Constitutions of the Organs depraving the action, and have a dependance upon the other parts of the Essence of the Diseas.

The common caus almost of al these recited affects seems to be an uneven or disproportionate nourishment or *Alogotrophy* of the parts. Now this dependeth chiefly upon two causes in this affect. The first is, the unequal inherent Constitution of the parts irregularly nourished. The disparity between the inherent Constitutions of the first affected parts, and the Head and Bowels, cannot be so wel collected by what hath been already said, but that it may deserve a further inculcation. The last caus, which is indeed of equal moment, is the very unequal distribution of the Arterious Blood into the parts unevenly nourished. That the Blood is unequally distributed in this affect we have already shewed, here we only

only infer that that must needs produce, an unequal nutrition of the parts. Al Creatures the more liberally they feed the more fat and fleshy they are unless som other impediment doth intervene ; but if the du quantity of aliment be substracted, they grow lean, and are daily more and more extenuated. Why should we not suppose that the same thing happeneth in the Parts of Creatures ? the Blood, or at least somewhat contained in the Blood, is acknowledged for the last aliment of al the parts, wher therefore that is liberally dispensed to one part, and sparingly to another, certainly, it is no wonder if one part be excessively augmented, and another extremely extenuated. But these things may suffice in general.

In particular,

First, We assert, that the first affected parts in this Diseas do dayly wax lean and fal away. Proof of this assertion cannot be reasonably expected, seing that dayly experience yeeldeth an ocular demonstration of it. But why those parts are so extenuated, that may require som reasons, and we offer these.

The first is deduced from the primary essence of the Diseas ; namely, from a cold distemper, a penury, and inactivity of the inherent Spirits in the parts aforesaid, For by this means the attractive, retentive, and concoctive faculty, do execute their functions in those parts, unduly and ineffectually.

The second is brought from the looseness, softness, and internal slipperiness of the same parts ; for hereupon the expulsive faculty is too much irritated, the breathing is too easy and dissipative, the circulation of the Blood is too slippery, the retentive faculty through the weaknes of it, parteth with the aliment too soon, and with too much facility : and this very thing almost happeneth here in these parts, which befallerth the Guts in a *Lyentery*.

How-

Howsoever it be, the expenses exceed the incoms, and by consequent those parts are extenuated.

The third Reason ariseth from the unequal distribution, and indeed defective in the first affected parts, of which we have already superabundantly discoursed.

Secondly, We affirm, that in this affect the greatness of the Head, and especially of the Liver, as also of the Brain is unreasonably increased. Sometimes the *Palsy* in the Head is conjoyned, which nevertheless we suppose to be of a different Species, and no part of this Disease: although we grant, that this affect may sometimes give occasion to the supervening *Hydrocephalus*. Moreover, we have sometimes seen, the Consumption being superinduced upon this affect, and long continuing also, the Face, and the parts about the Head to be somewhat extenuate before death. But this was produced by the Consumption, not by this Disease we now treat of. But that we may give a reason of that greatness unmeasurably increased in the Parts aforesaid. We note,

First, That the parts belonging to the Head and almost all the Bowels, do receive the Nerves from that part of the Spinal Marrow, which is included within the Skul, and therefore that these parts are not necessarily subject to that unhappy condition of the first affected parts. Wherefore no reason doth compel us to affirm, that these augmented parts are either affected with a cold distemper, or a penury and dulness of Spirits, or that the attractive, retentive, or concoctive faculties are therupon vitiated, and by consequence that those parts are totally exempted from the first cause of that extenuation which befalleth the parts first affected.

Secondly, we observe that neither looseness, nor flaccidity, nor softness, nor internal slipperiness are predominant in those immeasurably augmented parts, and
that

that these qualities (as it happeneth to the first affected parts) do not yeeld a more irritated expulsion then is requisite, so that the exportation should be feared to exceed the importation, which we have shewed to befall the extenuated parts.

Thirdly, We observe that the Blood in his circulation, by how much the more sparingly it is distributed to the first affected parts, the more liberally it doth water and nourish these parts. This we have already proved, and it is needless to insert more arguments to that purpose. These things therefore being observed, the Reason is playn, why the parts aforesaid are unmeasurably and irregularly augmented. For if the attractive retentive and concoctive faculties be not weakened in them, according to our first annotation, and the expulsive be not immoderately irritated according to the second, and in the interim if sufficient aliment be dispensed to them according to the third, the bulk of them must needs increase beyond proportion.

Thirdly, We affirm that the protuberancies or swellings of the Bones in the Wrists, Ankles, and the ends of the Ribs do vitiate the Organ in a twofold respect; namely, in respect of the greatness, and also of the figure. The parts vitiated in both respects are obvious to the Eyes, and therefore we shall supersede all further proof.

But why are the Bones stretched out after that manner in those places ?

Truly it is very hard to render a Reason thereof, neither perhaps dare we engage our selves by promise to give satisfaction in all respects herein to the curious. Therefore instead of an answer we dedicate to the Reader these subsequent observations as not altogether unprofitable.

First, The Bones in many do agree with the substance
of

of the Bowels. For first they consist of a certain simi-
 lary matter severed from the preterfluent Blood, not
 needing any laborious assimilation, and seem to admit
 a most easie nutrition till they arrive at the exaltation
 and highest pitch of their encrease; Moreover, they
 seem to be nourished until by age they are brought to an
 extream driness, and they seem not to be obnoxious to
 any considerable extenuation; so the substances of the
 Bowels are similiary being joyned together by the sepa-
 ration almost of the Blood alone, and they likewise easi-
 ly encrease, and are difficultly and rarely extenuated. Se-
 condly, The Bones are nourished almost after the same
 manner, as the *Parenchymata* or substances of the Bo-
 wels: Through the Arteries they receive the blood,
 through the Veins they amandate and conveigh away
 the superfluous portion of it, and instead of Vessels of
 the third kind wherby the excrements are expelled;
 they are furnished with Cels and Cavities. Some per-
 haps may doubt of the Arteries of the Bones, because
 so hard and rigid a part may seem unapt to admit any
 pulsation of the Arteries within it, we grant indeed
 that the Bones in regard of their hardness and stiffness
 are less apt for the pulsation of the Arteries, and ther-
 fore we acknowledg that they admit not within them a-
 ny notable ramification or branching of Arteries; but
 if any man will from thence infer that no Arteries are
 admitted into them, truly herein he must expect our
 absolute denial, for they are living Parts, they are nou-
 rished, they grow, and they exercise the Attractive, Re-
 tentive, Concoctive, and Expulsive faculties. Again,
 they receive the Blood, which they cannot do but by
 the conduit Pipes of the Arteries, and this is manifest
 by the bloodiness of them, when the Bones of Living
 Creatures are either broken or any other way divided.

In yong Creatures the spongy substance of the Bones, and the very Marrow is sensibly perfused with Blood, and the greatest part of their Cavities is filled more with Blood than Marrow. In elder and greater Creatures you may observe both Veins and Arteries through the Membranes enwrapping the Marrow; all which things do sufficiently prove that the Blood is distributed into the very Bones. But wise Nature (who in the conformation of all the parts doth most equisitely and aptly proportion all things) foreseeing here that the Veins and Arteries could not conveniently be extended by a longer carnification through the substance of the Bones by reason of their hardneis, she casteth that vast number of them, some being as smal as hairs, into almost inconspicuous little holes in the Bones. But if you soundly boyl the Bones of greater Creatures these Orifices of the insertion of the Vessels may very easily be perceived in the outward superficies if you remove the Skin enwrapping the Bones. But let this suffice concerning the Veins and Arteries of the Bones, seing that this matter is somewhat incoherent with our scope. As for the Vessels of the third kind, seing that the excrements of the Bones were not about to prove altogether improfitable, nor could commodiously be expelled out of the Body, Nature, instead of a Vessel of the third kind hath made certain Receptacles (namely Cavities and Cels) into which she would exnoerate and cast aside the excrements, namely that fat part which is altogether improfitable to furnish the Bones with nourishment. There are some who suppose the Marrow to be the principal nourishment of the Bones, but very inconsiderately, seing that the Marrow, as we have said, is altogether unapt for the generation and nourishment of the Bones, for the bones are not only hard

hard and solid and naturally of a white colour, but they consist of a certain earthy and clammy substance, which conditions differ very much from Marrow. Again, Marrow cannot by any art be sublimated to the firmness of a Bone. Moreover, Marrow melteth, and is dissolved with a moderate heat of the fire; but the Bones endure the most ardent flames of fire without any melting. Besides, Boil the Bones as long as you please, they resolve into a gelly, not into the substance of, or like Marrow. Again, Bones may be worn to powder, so cannot Marrow. Certain therefore it is, that the marrow is not the Aliment of the Bones but a kind of excrement, or rather secrement of them; profitable indeed, and therefore to be preserved in those receptacles. For the Bones being otherwise dry, cold, and rough, would be unapt for motion, were they not moistned and made slippery by the exundations and exhalations of the Marrow, and cherished by their gentle heat. All these things are confirmed by this single experiment: In young Creatures the greatness of the Bones being considered, there is less Marrow in the Bones, and more Blood, than in greater Creatures. In the Embrion, there are scarce observed any signs or appearances of Marrow distinct from the Blood. But after the birth the medullary substance is daily augmented; and it is visibly perceived to be less and less intermingled with the Blood; again in the maturity of years the Bones are filled almost with pure and sincere Marrow, without any considerable commixture of Blood; but in the approaches of old age it is credible that the Bones are less and less watered with the circulation of the Blood; and perhaps the Marrow it self upon the suspension and cessation of the nourishment is rather augmented than diminished; in which respect the propounded experi-

ment must be peradventure limited. Thirdly, the Bones (the Teeth perhaps excepted) cannot want their nerves, at least very little, neither are they supposed to be otherwise sensible, then by reason of the *Periostium*, or the Fibers thereof fastned into the Orifices of the Bones. In like manner the substances of the Bowels seem to obtain that dul sense, which they possess, rather by the Membranes and vessels, then from their own substance.

From hence we collect, that the Bones in this affect are not much otherwise affected, than the substance of the Bowels in respect of nourishment. We have already shewed that the Bones are not to be reckoned among the first affected parts, as likewise neither the *Parenchymata*: only we here further affirm that all the Bones universally considered, are not perhaps less sparingly nourished in this Disease, than they usually are in sound Bodies, for if they be nourished by way of coaugmentation, or joyning together, as the *Parenchymata* are, and with such facility also, if they possess Arteries and Veins delated unto them, and Cells, and Cavities to receive the Blood, if they be not in the number and condition of the first affected parts, and if they receive not Nerves from the Spinal Marrow; it is very credible that they do duly receive, laudably retain, and perfectly concoct their Aliment. Moreover, If you will consult experience, Children afflicted with this Disease, a regard being had to their age, and the magnitude of their parts, weigh heavier than others for the most part, as we have sometimes observed, which very thing seemeth partly to be ascribed to the greatness of the Bones. Although in this case we wish more frequent, certain, and accurate observations, which others who are befriended with opportunity may oblige the world withal: in the mean time we suppose in general that

that the Bones are not illiberally nourished in this Disease.

Some may reply, *That what hath hitherto been spoken doth concern the nourishment of the Bones in general, but that they yield not a reason of the protuberances in them.*

We deny it not, but seeing that these faults of the Bones depend upon their unequal nourishment, as we have already proved, we supposed it would not be unprofitable to purpose some reason of their nourishment in general : now we draw neerer to the aforesaid swellings of the Bones. And we observe, Secondly, That those tumors of the Bones are not of a different kind in respect of the other parts of the same Bone, but that they are parts altogether similiary and of the like kind with the rest, and that they are not faulty in respect of the similiary Constitution, but in respect only of their greatness and figure.

From hence it followeth thirdly, that these swellings are not produced by any illegitimate matter of the Bones, or by any other vertue than the same by which and from which the other are generated.

Fourthly, That the said swellings are produced by an unequal nourishment of the Bones, as by a more liberal nourishment of the swelling parts, and a sparing nourishment of the other parts of the same Bone. And these Three last observations we have already abundantly proved where we treated of the affected parts.

Fifthly, We observe the *Epiphyses* of the Bones in the Wrists and Ankles, and perhaps in some other places, to be more soft and spongy than in the other parts of the same Bones. And peradventure they receive into themselves greater Arteries and Veins, although indeed we are not yet fully assured of this. The

tops of the Ribs are also much more soft and spongy than the other parts of them. From whence we infer that those more soft and spongy parts of the Bones may more easily and freely admit the circulation of the Blood, and therefore be more plentifully nourished than the rest of the parts of them. You will say, That softness and sponginess of those parts is observed to be as well in healthful Children as in those affected with this Disease. We grant it, but yet it must needs be, that those parts which are of a more compacted substance, and with difficulty admit the circulation of the Blood, must be affected and obstructed upon lighter causes, then those parts that are more open, and more easily receive it. But the Blood in this affect is transmitted to the external parts somewhat more cold, viscous, and thick, then it ought to be; therefore those parts which are unapt to admit the circulation of it, those are more apt to be somewhat obstructed, and less liberally nourished.

But, why also are not those soft and spongy parts more liberally nourished in sound Bodies, seeing that they (as hath been said) do more plentifully receive the Blood ?

We answer, Because, as in health those parts do in a larger measure receive the Blood thorow the Arteries, so they remit the same more plentifully thorow the veins which certainly doth preserve them from that excessive augmentation unto which otherwise they would grow. But in this affect the same parts by reason of the coldness, thickness, and viscosity of the Blood, do perhaps more sparingly and more slowly remit it, then it is poured into them, and therefore from that abundance and excess of the Blood, those parts do somewhat increase; whilst the other parts of the Bones by reason of the narrowness of the cavity of the Artery, are not perhaps sufficiently nourished with Blood, wherby to obtain an equal

qual nutrition and increas. And from hence (at least probably) we deduce the inequallity of the nutrition of the Bones in this affect. But the condition of the Blood wherby in this Diseas it is apt to obstruct any parts thow which it floweth, seems to have a peculiar respect to the quality of the Bones. For in the Bowels, the Lungs excepted, the Blood doth seldom Generate obstructions, as also neither in the first affected Parts: However it be the Bony substance, either because it is incapable of the internal slipperiness, or because the nutritive juice in the mas of Blood is peculiarly apt to congeal in the parts so vehemently fixed: or lastly, because it hath in its own nature some affinity with the Bones: we say, the Bony substance is easily infested with obstructions in this Diseas, and therupon it happneth to be unequally nourished.

The *Faults of breeding Teeth* are likewise to be referred hither, seing that they also seem to depend upon this unequal nutrition of the Bones. For if the Teeth should be equally nourished, they would be of a uniform substance, and would not fal out by pieces, as it here frequently happneth. For the similiary parts, when they are equally nourished, acquire not such an interrupted and unequal consistence, as to be easily broken in pieces. Wherefore seing the Teeth are parts naturally delighting in a similiary substance, were they equally nourished, they should enjoy an equal and uniform consistence, and would either continue firm in their gums, or would fal out whole. And there can scarce any other reason be given, why they should be broken and fal out more on one side, or in one part then another. We grant indeed that their aptness to break, may hitherto conduce very much: but we conceive that even that aptness to break, doth in great part depend upon the unequal nutrition aforesaid. For otherwise the

the Teeth do usually obtain a very firm, solid, & coherent substance; and the truth is, they seem to consist especially in this viscous affect of a very matter. For the Blood for the most part is observed to be more viscous and thick then ordinary, so that this aptness to break off the Teeth, cannot be so easily ascribed to a defect of viscosity in the matter, as it may much more probably to the inequality of the nutrition. We conclude therefore that the standing out of the Bones, and likewise the faults of the Teeth, do proceed from the unequal nutrition of these parts, arising from a peculiar obstructive disposition of the Blood, having reference especially to the Bones. Now we proceed to the crookedness of the Bones in this affect.

Fourthly, In this affect the Bones are frequently somewhat crooked, especially the Shin Bones, and the lesser Bones of the Legs; also the Bones of the Cubit, the lesser of the two long Bones of the Cubits, and the bigger Shank-Bone, sometimes the Bones of the Sholder and Thigh: som Joynts also becom crooked, sometimes inward, sometimes outwards: the whole Spine is likewise many times bended, sometimes it is wreathed like the letter S; namely, partly forwards, partly backwards, and sometimes partly to the right Hand, partly to the left.

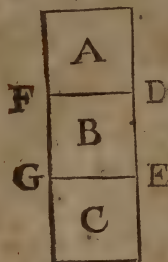
Some ascribe *this crookedness of the Bones*, to the bending faculty of them; for say they, in the tender age of Children, the Bones themselves are not so stiff stubborn, and inflexible, as in their riper years; and therefore upon the invasion of this Disease, they are rendred in some degree easily flexible. Therefore they rebuke the Nurses, which too soon commit the children to their Feet, supposing, that the Bones are made crooked by the sustained burthen of their Bodies. Others also tax the Nurses of imprudence in swadling them.

But

But we cannot yeeld our full assent in all respects to these Reasons. And first we flatly deny, that the Bones of Children afflicted with this Disease are more flexible, or less stiff and friable then the Bones of others. For we have already proved, that the Bones in this affect do not differ in respect of their similiary substance from the Bones of sound persons. Besides, no man hitherto worthy of credit hath attested that he hath seen the Bones flexible in this Disease. Moreover, if we should grant that in this tenderness of years the Bones might perhaps be somewhat bended, yet they would not continu so bent like lead or wax, but being left to their liberty they would return again to the proper position and figure of the parts. For they consist not of any ductile matter, and therefore by being thus bent, they would either be broken or else doubtless they would endeavor to reobtain their former situation. As for the ignorance or negligence of Nurses, although we do not altogether excuse it, yet cannot we justly impute this crookedness of the Bones to their carelessness. We see the Children of Poor People are ordered and handled with less care, and sooner committed to their feet then the Children of the rich, yet the Children of Poor People are more rarely afflicted with this infirmity, then the Children of the rich. Besides, we have known Nurses use all manner of diligence as swadling them, and every other way laboring to prevent this incurvation, yet al their pains, otherwise praiseworthy, hath in this respect been successless. Therefore we must indeavor to find out some other cause of this crookedness.

We compare the Bones therefore, in which this crookedness useth to happen, to a Pillar, and not unaptly, seeing, that when they are erected, they resemble a Pillar; and from thence we deduce a demonstration that illustrates

strates and makes the matter very plain. Let the Pillar therefore consist of three stones A B C placed over one another. We suppose it such an one as is perpendicularly erected on every side, and of the same height : If therefore you shal fasten in a wedge on the right side be-

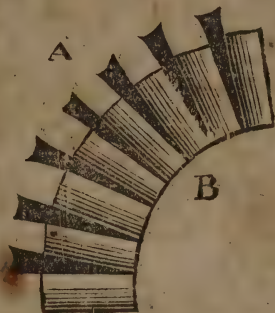


tween the stones A B through the line F D, the Head of the Pillar ; Namely, the stone A will of necessity be bended towards D and will make an Angle in D, and the height of the Pillar on the right side, will be higher than on the left. In like manner if you drive in another wedg thorow G E into the stones B C the pillar will be yet more bowed, and the angle will be made in E. Now therefore the Pillar stands

bent to the left hand after this manner:



ABCFGDE. but if you build the Pillar of more stones, & betwixt every two, as hath been said, a wedg be interposed on one side, it will not resemble the figure of a Pillar, but the proportion of a Bow, as by this following may be perceived.



Now that we may accommodate these things to the present business, if the Bones aforesaid be more plentifully nourished on one side, and therefore do grow out more on that then the opposite side, there is a necessity, that that must grow crooked: For here the overplentiful nutrition of that side, hath the same power after the same manner to bow the Bones, as the interposed wedg hath to bow the Pillar, save that the wedg is fastned only in some places of the side of the Pillar, and the overplentiful nutrition of the side of the Bone, is commonly equally made, according to the whol length therof. For the aliment received into the Bone, in what part it more liberally admitteth it, that part it obstructeth: and like the wedg thrust into the Pillar it extendeth it into an augmented length, wherupon the Bones must needs be bowed towards that side which is not lengthened in an equal degree with the other. Moreover, if the production of one side of the Pillar happen only in one or two places therof and not in many, as in the third figure, then

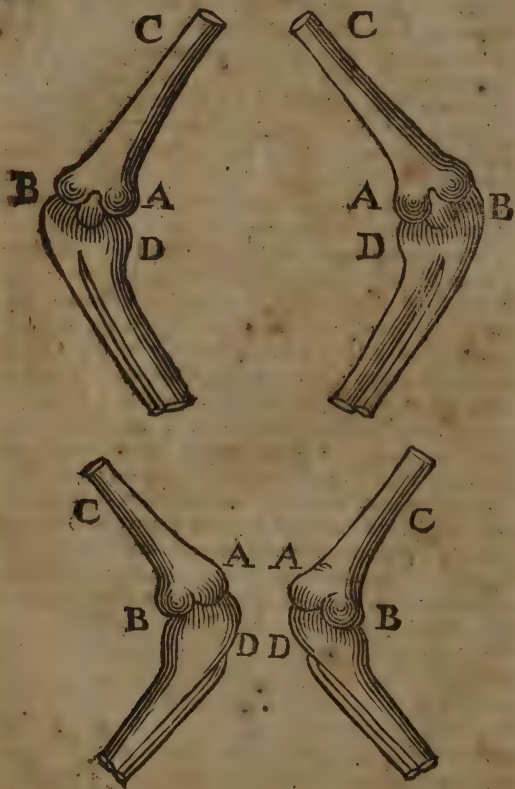
so

so much the neerer the inflexion of it approacheth to the figure of a part of a Circle, or a Bow. But if the said side according to the total longitude thereof should be equally lengthened beyond the opposite side, doubtless it would be bended towards the opposite side, & would exactly resemble a piece of a Circle or Bow without any Angles, just after the same manner ariseth the bending of the Bones in this affect: namely, from the greater lengthning of the side most nourished; for seeing that that lengthning happneth by the received aliment, according to all the parts of that side, an Angular figure cannot be expected, or one compounded of many straight ones angularly connexed, but a crooked one like a Bow, wherein the convex part is constituted by the side, plentifully nourished, & the concave or hollow part by the side, which is sparingly nourished. But when it happneth that some part of the convex side of a crooked Bone is disproportionatly nourished, in respect of the opposite side, without all doubt the convex Bone wil stick out more on that part then in the rest: and so from the inequallity of the nutrition, we have given a reason of the crookedness of the Bones in this affect. We wil ad for a higher confirmation of this matter. An observation raised from the cure of this crookedness of the Bones. The Quacks of our Country are wont to rub dayly the hollow, not the convex sides of the Bones, and that rubbing, say they, doth very much conduce to the cure, but this doth rather hinder it. But it is certain that rubbing doth powerfully summon the nutritive juice out of the Bloody mass into the part so rubbed, therefore if at any time you rub that hollow part which is insufficiently nourished, it is no wonder if it do good, seeing that thereby the aliment is more plentifully allured, and the heat of the part is also excited and augmented; neither on the other side is the

Gibbous part of the Bone, being hurt by rubbing to be wondred at, because by that means the aliment is attracted to that part which was before superabundantly nourished: besides, the Oyntments, which may cherish the inherent heat, and strengthen the nutritive faculties, after the rubbing, do most good, when they are applied to the hollow part of the Bone; but the convex part a strait ligature which may restrayn the rising up of the Bones is usually fitted with desired success: chiefly indeed for this reason, because the capillary Arteries which convey the Blood, or nutritive juyce, to that side of the Bone, are bound up by such a ligature, and therupon the nutriment is lessened. And these things shal suffice concerning the crookedness of the Bones in this affect.

Moreover, To this Article we opportunely ad the inflexion of som of the Joints, as of the Knees, and Ankles, which happneth very frequently in this Disease. Somtimes being made inwardly, somtimes outwardly, And this bending also seemeth to be not unfitly referred to the inequallity of nutrition. For if it happen by unequal nutrition, that one side of the Shank-Bone be so lengthned more then the other: suppose outwardly, that it doth somewhat lift up the outward part of the *Epiphysis* of the Shank-Bone above the inward part, the joynt in the Knee must needs stand outwardly bent; and on the contrary, if the inward part be lifted up, and the outward depressed, the same Joynt must needs stand inwardly

bent : as may be easily perceived by the following Figures.



In the Joynt of the Knee, A B, that part of the appendance of the Shank-bone B, in the two first Figures, is higher than the other part of the same appendance; whereupon the Bone of the Thigh (is inwardly bowed, and so likewise is the Shin-bone D; but the Joynt A B is thrust somewhat outwardly. But in the two last Figures all the contrary things may be observed. The Joynt A B is inwardly, because that part of the Shin-bone A, is higher than the other part of it B. Whereupon it must needs lift up the inner and lower top of the Thigh-bone, so that the Thigh-bone will be bent outwardly, and the Joynt inwardly.

The same thing likewise may happen in the Ankle-bones, and the turning Joynts of the Back, if the Bones fastned to the Joynt be higher on one side than on the other. But in the Ankles, because there, besides the Shin-bone, the lesser Bone of the Leg is also fastned through the Joynt, it may so fall out, that the lesser Bone below may stand out further than the Shin-bone, and so bend outwardly the Joynt of the Ankle; and on the contrary, if it happen that the Shin-bone be longer than the lesser bone, the Joynt must needs be inwardly bent. Although we confesse that such an inequality of length between the Shin-bone and the lesser Bone in the Leg doth not so often happen.

Moreover, We suppose that the preternatural bending of the Spine doth rarely happen from the unequal altitude of the sides of the turning Joynts of the Bones, but more often from another cause which we will now prosecute. We have already said that the Spine is somewhat weak in this affect, and that Children afflicted with this Disease are unapt not only to motion, but also to stand upon their feet, yea, and to raise their backs by reason of the weakness of the Spine. Therefore

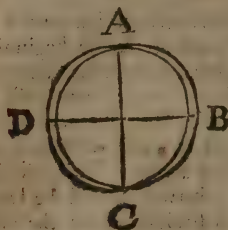
when-

whensoever their Bodies are raised, they seek somewhat to rest upon, and they suffer their Spine to be bowed sometimes forwards, sometimes backwards, sometimes to the right hand, and sometimes to the left; whereby the burden of their Body may be rested upon something that stands neer them. Hereupon it many times happens, that the Ligaments of the turning Joynts of the Spine in that part which is most commonly bending out are loosned and lengthned, and on the opposite side they are contracted; so that intract of time the Spine cannot be erected according to the straight and natural Figure. And truly in this case we cannot excuse the Nurses indiligence or negligence, because they do not observe with a sufficient attentiveness, to which part the Children which they suckle are most prone to bend their Bodies, that by that means they may endeavor to bend them to the opposite part: In like manner also when Nurses without due regard and care do too soon commit weak Children to the use of their feet, it may happen, that, when the regular motion of the Muscles is too weak to bear the Body, Children may suffer either their Knee or Ankle to be bowed to one side; whereupon the Ligaments of the Joynt are extended either on the inner or the outward side, and by consequence the Ligaments on the contrary side are contracted, whereupon the joynt must needs be bended either inwards or outwards, therefore although we have denied above that the crookedness of the Bones dependeth hereupon, yet we grant that the bending of the Joynts may happen in weak Children by the negligence of the Nurses. We grant moreover that the Bones which would otherwise have been straight, may be crooked by an unskilful swadling; yet that this cause doth happen exceeding rarely in, this affect we are somewhat con-

confident, as we have shewed already more at large. Now we proceed to the pointedness and narrowness of the breast in this affect.

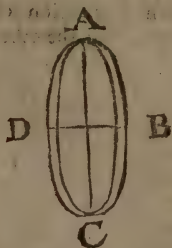
We observe that this pointedness and narrowness of the Breast doth not appear presently at the beginning of this affect, but that it succeedeth upon the confirmation of the Disease, and is by degrees intended, till by the perseverance of the Disease it becomes evident and conspicuous, when the Breast forwards resembleth the Breast of a Hen, or the Keel of a Ship. This viciated Figure of the Breast which otherwise should be broad according to Nature, and not straightned on the sides, and even not pointed forwards, we reduce to four causes. The three former whereof we confess do contribute little efficacy to this matter, but the fourth alone doth almost al the work. Yet because the three former do contribute something, we will likewise recite them here in order. Be this the first, In this affect the Bone of the Stern by reason of the augmented Bulk of the Liver is somewhat elevated or thrust forward, wherupon there happeneth some part of the said viciated Figure; and moreover from the same elevation of the Bone of the Stern there happeneth a certain contraction of the Ribs towards the Spine, and this causeth the other part

of the viciated Figure. This contraction of the Ribs



we thus demonstrate. Let the circle be A B C D, this must be supposed to be made of a flexible matter, but not equally extensible, as for example, of the Bone of a Whale. Therefore when the sides A C are both stretched from one another, so that line of distance is produced into length

between A C, then the sides of that circle D B are necessarily contracted almost in equal degree, and by the same means the line of lateral distance from D to B is abbreviated; for the Circle becomes an Oval Figure, as any man shall find who will take the pains to reduce it to experiment. For the Figure will be changed into this form which the Figure following doth express; In which the line of distance between A and C is represented longwise, and withal the line D B appears to be abbreviated, and the Circle becomes Oval; neither is there need of more words to prove this matter.



Now it must be known that the opposite couples of the Ribs do express a certain

certain rude kind of circular Figure, especially the uppermost which chiefly fashion the Breast, by the mediation of the Spine on the hinder part, and the Stern on the fore part. Nor should it trouble any man, because they will not make an exact and perfect Circle, seeing that our demonstration is as effectual in a circular Figure how imperfect soever, as in the most exquisite and perfect; provided that there be a coherence among all the parts, that they be not distorted, that they be flexible, but not easily extensible; which conditions are sufficiently conspicuous in the Figure of the Ribs even now proposed to view. Therefore if in this affect the Bone of the Stern be somewhat elevated forwards, that it may yield room to the augmented Bulk of the Liver, the Ribs towards the Spine must needs be drawn in nearer to one another, whereupon the Breast must unavoidably be laterally straightned, the latitude of it, being lessened.

Some may say, *If the rising of the Bone of the Stern did conduce any thing to the pointed Figure of the Breast, it would chiefly effect that about the inferior Ribs, seeing that this elevation of the Stern doth begin at the lower part; but it is manifestly known to fall out otherwise; for the narrowness of the Breast happeneth chiefly about the Armpits, and afterwards beneath the Channel Bones; but the lower Ribs seem to be enlarged about the sides rather than straightned.*

We answer, That the Five lower Ribs are not articulated with the Stern, neither do they make a perfect Circle; and therefore in no wise do they relate to the propounded demonstration; but the stretching of them dependeth upon another cause, namely, the fullness of the Hypochondriacal parts. Let it likewise be noted that we assign not this for the chief cause of the

viciated

viciated Figure, yea, we suppose that it conferreth very little towards it. And so we proceed to the second cause of this viciated Figure, which we also conceive to be a very slight one.

In this affect the *Hypochondriacal* parts is almost perpetually observed to be full and stretched, namely both in respect of the greatness of the Liver, and also because all the other Bowels almost which are contained in the bottom of the Belly are sufficiently large; seeing that as hath been said, the first essence of this Disease is not rooted in them. And lastly, Because the Guts and the Ventricle are usually more or less distended with wind. But now from that fulness and extension of the *Hypochondriacal* parts we may justly collect that in this affect the Ribs are drawn downwards a little more than is expedient. For the greatest extension is here observed in the oblique Muscles that are extended beneath the *Hypochondriacal* parts; Now the Muscle obliquely descending hath toothed heads fastned to the sixth, seventh, eighth & ninth Ribs, and the part of the broad tend on also obliquely ascending is adjoynd to the grizles of the ninth, tenth, and eleventh Ribs. Wherefore seeing that the said Muscles are almost perpetually too much extended in this affect, they must needs in some manner draw the said Ribs downwards, and seeing all the Ribs are firmly fastned together by the intercostal Muscles, it happeneth that in this affect all the Ribs are somewhat drawn down-

wards. But now that these Ribs so drawn down, do
somewhat straighten the Breast may be perceived by this
following Figure.

Fig. 1.

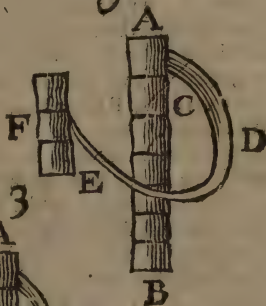
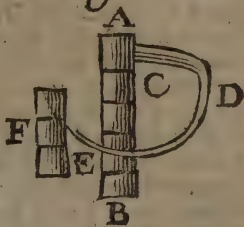


Fig. 3



Fig. 2



Let A B be the Back-Bone. C D E the Rib. F the Bone of the Stern. We suppose that every one may see here in the *Skeleton*, that the Ribs are not conjoyned with the Spine, according to the straight Angle, but that the Angle beneath the Rib is somewhat less then the straight Angle : So that if the Rib be drawn a little upwards, the Articulation of it approacheth neerer to a straight line. We suppose also, that the circulation of the Rib, whether with the Spine or with the Stern abideth firm, and doth not draw upwards (least any man should er) save only the middle parts of the Rib between the said Articulations. We say, therefore on the contrary by how much the more downwards the Rib is drawn, so much the more acute is the Angle with the Spine, which it then maketh : Wherefore that part of the Rib furthest distant from the Back-Bone A B C; (namely, D in each of the Figures) as being thrown downwards, it constitutes a more acute Angle with the Spine, so is it also less distant from the Spine then it was before, and rendreth the broadness of the Breast more narrow. For the sides of the Breast were then indeed most broad, when the Ribs are most erected upon the Spine, according to a straight line. For that part of the Rib D will be then furthest distant from the Back-Bone A B, as you may soon perceive, if you compare the first and second figure with the third. For in the third Figure, the Rib is exprest erect in a straight line, with the Back-Bone, and then that part of the Rib D is sensibly further distant from the Back-Bone A B, then it is in the first or second figure, as he that wil examin them, shal quickly apprehend: but in the second Figure, the Rib with the Spine is supposed to make a more acute Angle, and in proportion that part of it D (as you may perceive) is less distant from the Spine than the same part D in the same Figure, whose Angle

Angle is supposed to be less acute ; and yet that is much less distant from the Spine, then in the third Figure, whose Articulation is erected to a straight Angle. We infer therefore, that the Ribs, when they are drawn upwards, do amplify the Breast sidewise, but when they are drawn downwards, then they straighten the Breast on the sides.

This is further confirmed in that, because at such time when the Breast is dilated; namely, when the breathing is rightly performed, the Ribs are drawn a little upwards by the strength and force of the *Intercostal Muscles*; and when the expiration is performed; namely, when the Breast is contracted, the same Ribs are drawn back again downwards by the help of the oblique *Muscles* of the *Abdomen*. Any man may observe this in himself or in any other man especially in great inspirations and expirations. For in a vehement inspiration he shall plainly perceive at the same time to be lifted upwards, and withal to enlarge the breadth of the Breast; but in a vehement expiration he shall feel the Ribs as it were bowed downwards, and at the same time contracted inwards. Neither of these things could happen, unless the position of the Ribs were such, as that those beneath in respect of the Spine, should make an acute Angle, and being more depressed, should make it so much the more acute, and by consequence the Breast, should be then most straightened; and on the contrary being lifted upwards, they should approach neerer to a straight Angle, with the Spine, and so extend the sides of the Breast. We conclude therefore that the Ribs in this affect are drawn somewhat downwards, and that the Breast is contracted on the side by reason of the plenitude and tensity of *Hypochondriac* parts; although we grant as we have intimated above, that this cause is not so considerable, that

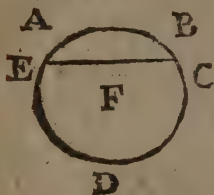
we should attribute any great part of this Disease unto it.

Be this therefore the third, The Cause of this vitiated Figure of the Breast, *Is a lateral growing of the Lungs in the Pleura*, in this Disease especially, being confirmed it is most frequently observed to happen. Doubtless such an adnascency doth restrain and interrupt the motion of the Ribs outwardly, wherby the Breast is laterally dilated. For if the Rib, under which this adnascency lieth, should endeavor forcibly to remove it self, from the center of the Breast, there would be danger of pulling the Lungs that grow to it, or the *Pleura* it self from the ribs with intollerable pain. For although the Lungs upon the ingress of the ayr admit an easy extension, according to all the parts thereof, yet when they fall down, or are stuffed with thick humors (which most frequently happeneth in this case) they scarce admit any notable distention, without dissolving the unity either of some Vessel, Membrane, or the substance of the Bowels themselves. Moreover, whilst we consider that in sound bodies the Lungs are very rarely laterally divided from the *Pleura*; and but in those parts only of the chest, which were to be exposed to motion at a considerable distance; namely, the Back, the Stern, the *Mediastinum* (that is the Membranes that divide the middle of the Belly) and perhaps the middle parts of the *Diaphragma*, &c. We conceive that wise nature did this deliberately and with design; namely, least their connexions should either offend the dilations of the Breast, or render the Lungs themselves obnoxious to those kind of calamities. However it be, it is scarce conceivable, but that preternatural growing together of the Lungs, with the *Pleura* more or less must hinder and retard the free spreading of the Ribs towards the sides, and therefore it conduceth a little at least to occasion the narrowness of the Breast.

But

Be this the fourth, The caus of the vitiated Figure aforesaid, is an unequal nutrition of certain parts of the Ribs in respect of others. And this cause we affirm to be much more effectual then the rest, to procure this Symptom. Which that we may demonstrate, we assert first, that the seven uppermost Ribs do chiefly, if not solely, constitute this Figure of the Breast: for the five lowermost, as they are not immediatly conjoyned with the Stern; So neither can they in any manner point, or elevate the Stern. Ad also, that seing (as we have already shewed) they do not close in perfect Circles, their Figure is easily movable, that it may more or less yeeld to the fulness of the *Hypochondriacal* parts. But the seven upper Ribs are Articulated by their Grizles, with the Bones of the Stern: from whence it may perhaps com to pass, that they do somewhat lift up foreright thos bones of the Stern, which they do touch, when the five lower Ribs being deprived of the contact of the Stern, cannot effect it. Secondly, We assert, that all the Ribs, and not only the five lowermost, but also the seven uppermost do admit an equal nutrition in this affect, and that they are more nourished in one part then in another, & therfore that they are more extended in length by that, then by the other, which is more sparingly nourished: and indeed that they grow more on that side in which they are conjoyned with the Gristles of the Stern, and that they are less and more slowly lengthened on the other part, namely, the Head or top, wherby they are fastned to the Regions of the Back. The Reason is, becaus the forepart of any Rib is more soft and spongy, then the hinder part of it, as any man may make tryal in any Creature. Seing therfore (as it is clear by what hath been said) that the softer parts of the Bones do in this affect more easily receive their aliment and augmentation, then the harder

der and more solid, it followeth that the foremost parts of the Ribs which are most soft, are more lengthened than the undermost. Thirdly, We assert, that in a Body of a Circular or Anulary Figure, if one part of the Ring be more lengthened than another, the other parts must needs give place to this increas, or else that part so unequally lengthened, wil either outwardly hang out, or be inwardly knotted, either upwards or downwards, and be bent either one, or many of these ways. This



we thus demonstrate. Let the Circle or Ring be A B. Let the former parts of it be supposed to be lengthened from A to B. But the other parts of it; namely, C D E to remain in their position, and not at all to yeeld to the said lengthning. These things being supposed, the lengthened portion of the circle,

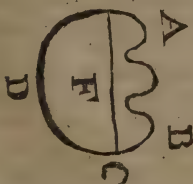
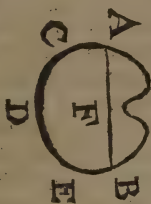
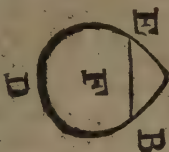
namely, A B must needs be either lifted up, outwards, or depressed inwards, either bent upwards or downwards or variously: For otherwise the distance between the limits of the string F would not suffice to contain that portion of the Circle now lengthened, the figure of the Bow being changed. For those limits did only suffice before; therefore the Bow being lengthened, and not the string, or the tops and limits of the string, it cannot be, that the Bow should be to the string as before. It must be changed therefore, the bending being made either outwards or inwards, or upwards or downwards, or many of these ways, as may be perceived by the Figures following. The first Figure represents a

Bow

Now outwardly prominent • The second, Inwardly, and the third variously bent and intorted. And indeed the first doth very fitly set out the Figure of the Breast vici-

ated in this affect. For we have noted above, that the ribs articulated with the Stern & Spine do make a kind of imperfect Ring, and that they are in this affect sooner nourished, and lengthned in the foremost, then in the hindermost part, therefore in respect of the cause this Symptom fully and fitly agreeth with that Figure first described. Besides, we have supposed that the parts of the Circle do remain firm: that also in this affect may be accommodated to the lateral and hindermost parts of the ribs For seeing these grow much less then the foremost, certainly, they may wel be supposed to be stable, unless, perhaps

som may say, that either the sides and hinder parts of the Ribs, by dilating themselves, or their Joynts, with which they are fastned with the turning Joynts of the Back, by suffering the Ribs to be bended backwards, do yeeld
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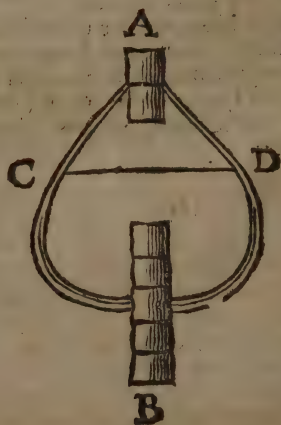
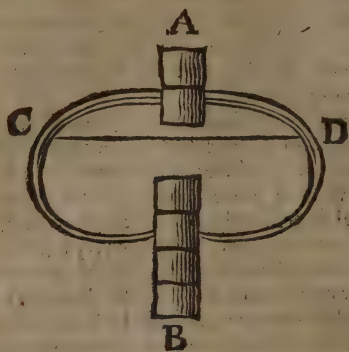
somewhat to that exceeding augmentation. But neither of these can be rightly said. For first, the latter and hinder parts of any Rib as they are more hard and solid, so are they likewise more stiff and strong then the formost; now it is absurd to imagine that the weaker parts of the same Rib can bend the stronger, or that the less flexible parts will yeeld to those parts which are easily flexible. Wherefore the lateral and hinder parts of the ribs cannot be so bent, as that they should yeeld to the formost lengthened parts thereof. As for the Joynts of the Ribs, doubtlesse that Joynt, wherwith the Rib is conjoynd with the turning Joynt of the Breast, can by no means suffer the Rib to be bent so much backward, as that it should yeeld to the lengthning thereof; and that not only because it is double; namely, in the hollowness of the turning Joynt, and in the transversal process thereof: and therefore very unapt to permit a backward motion. But chiefly, because it is even ten times stronger than the formost Joynt, wherwith the same rib is fastened to the Bone of the Stern. Now a Joynt ten times stronger, and withal double, and in such a manner formed double that it is altogether unapt to endure any retrograde motion, cannot by any means be imagined to yeeld backwards, least the Joynt ten times weaker should be bent somewhat forwards. We must conclude therefore, that the lateral and hinder parts of the Ribs do not yeeld to that unequal production of them, which happneth forwards, and by consequence, that in this respect they are to be accounted firm; and therefore that unequal lengthning, must needs change the figure of them, on the forepart; and that by bending them thereeither upwards or downwards, or inwards or outwards, or diverse ways.

This bending of the Ribs here cannot be made either upwards or downwards, because the Ribs in regard of their

their latitude are unapt to be bowed either way. Ad also because that they are firmly restrained by the Intercoſtal Muſcles in their poſition ; ſo that without offers of violence to theſe Muſcles, they can ſcarce be bent, either upwards or downwards.

That that elongation cannot, or indeed very ſcarcely can bow the Rib inwards may thus be proved ; becauſe, the greatneſs of the Liver is repugnant to ſuch a motion. For we have proved before, that the greatneſs of that Bowel doth ſomewhat liſt up the Bone of the Stern outwardly or forwardly. Then the very figure of a Circular Rib doth evidently contradict the inward making of any plication, or bending. Laſtly, becauſe that elongation doth not many ways bend the Ribs, it may from thence alſo be inferred, that ſuch a bending would infer a compound Figure, and ſhould neceſſarily contain ſome of the ſimple figures before rejected.

Wherefore we conclude, that that unequal length of the Ribs on the forepart, muſt needs change their outward Figure, elevating the Bone of the Stern, and then pointing forwards the Figures of the Breſt (otherwiſe almoſt even.) The following Scheams do lively expreſs the manner of it.



Let A be the Bone of the Stern, B the turning Joynts of the Back. C and D the two opposite Ribs, which as we have said do make a kind of Ring. Therefore if the forepart of the Ribs; namely, between C and A and between D and A be lengthned, and yet the parts between CB and DB are no way answerable to this elongation, the figure of the Ring must needs be outwardly changed. Therefore seeing that the Rib is, (as we have already shewed) unapt to be bent either upwards or downwards, or inwards, it must needs be outwardly bowed, as it is exprest in the second Figure, wher the stern A by reason of the elongation of the part of the Rib CA and DA is represented, as if it were outwardly pointed, which is the very vitiated Figure of the Breast in this Disease.

Beside the causes of the narrowness of the Breast hitherto commemorated, we can here ad the smal increase of the Ribs between C and B and also between B and D. For the Just Latitude of the breast doth chiefly depend upon a due augmentation of those parts of the Ribs. For if those parts of the Ribs do grow to a just length, they must necessarily dilate the Breast unto the Ribs almost in a just proportion, that little of the narrowness only being taken away, which the former causes alone were able to introduce. For by how much the more those parts of the Ribs are lengthened, by so much the more also the Lateral part of the Rib D and the part C will be distant from the Back-Bone B, and wil make the Breast so much the broader. On the contrary when upon the increas of the other parts of the Body, those parts of the Ribs are but little, or not at al augmented, they must of necessity be laterally less distant from the center of the Breast then is meet, and therefore the Breast must
be

be straightned towards the sides. For the sides of the rib C and D are so much the less distant from the Back-Bone, and the center of the Breast, as the parts of the Ribs between C B and D B are less lengthned. And let these things suffice to have been spoken concerning the narrowness and acuminatation of the Breast in this affect: With which we put at last an end to this disquisition of the Organical vices occurring in this Disease.



CHAP. XIV.

The Secondary Essence of this Disease in the Animal Constitution.

Having put an end to the examination of the Natural and Vital Constitution, vitiated in this affect, it now remaineth that we make enquiry into the Animal Constitution. And we have already affirmed, that no primay fault doth here occur, and that it is a part of the primary Essence of this Disease. But whether there lurk in it any secondary vice, that we shal now examin.

But seing that neither the Ancients nor the Modern Writers, who have written of the Animal Faculty, have made any mention of the Animal Constitution, nor indeed so much as once attempted a description of it: It may very justly be expected from us, who acknowledg such a Constitution. And seing som wise men do dissent from that description, which may be deduced from the

the opinion of Antiquity, and the common opinion concerning the Animal faculty, and otherwise expounding the matter do substitute a somewhat different description, we thought good to offer both to the Readers consideration.

According to the former and vulgarly received opinion and description of the Animal faculty, the animal constitution is that affection of the Body which consisteth in the generation and due motion of the Animal Spirits. Now by the due motion of the Animal Spirits they understand the excursion of them from the Brain thorow the Nerves like lightning, and again their recourse back to the Brain, whereby they declare unto it what is perceived by the Organs of the outward Senses.

Others (as we have said) do otherwise explicate this matter. They grant indeed that the Animal constitution doth include the generation and distribution of the Animal Spirits but they say that that swift motion of the Flux and Reflux of the Animal Spirits like lightning, is inconceivable in the Nerves, and if it be not unprofitable, yet certainly it is very little necessary to establish the animal faculty. But instead of this they substitute in time of waking a certain contractive motion, of a moving endeavor of the very substance of the Brain, of the Spinal Marrow, of the Nerves arising from thence, and of the parts into which they are distributed. And this motion or endeavor produceth (say they) a certain Tensity in the aforesaid parts, by whose force all the alterations imprinted in those parts by any objects, are communicated to the Brain. For as in a Harp when the strings are stretched to a just pitch, if they be stricken in the most gentle manner at either end, that motion in a moment, at

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least

least a Physical one, runneth to the other end ; so they likewise affirm that any Nerve being moved which is duly stretched without the Skull, that motion is extended to the Brain it self by reason of the continuity and Tensity of the said parts, and there fixeth a certain impression conformable to the caus thereof. But in time of sleep they suppose the Brain, the Spinal marrow, and some of the Nerves to be somewhat loosned. And indeed they say perpetually and simply that the foremost connexions of the Spinal Marrow with the Brain remain loof continually during sleep ; but they grant that the hindermost connexions with the *Cerebethi* are somewhat extended, as in Night-walkers, and so by that means they do in some sort discern outward objects, but they judg not of them by common sense, but as it were reflected from the memory to the Fantasie. Neither do they suppose it necessary that all the inferior parts of the Spinal Marrow, and therefore the Nerves from thence proceeding should be perpetually loosned during sleep : seeing that most Birds sleep standing upon their feet ; seeing that respiration in time of sleep doth presuppose the Tensity of some Nerves ; and lastly, seeing where sleep first steals in, the uppermost Nerves are wholly loosned before the neathermost. As for Dreams they conceive that they proceed from a various and chanceable agitation and commixture of divers impressions treasured up in the memory, which are now again freshly perceived by reason of a retained Tensity in some parts of the Brain. But when in deep and profound sleeps no dreams are represented, then they say that the whol Brain is loosned.

Now whether the former opinion or this latter be most agreeable to truth, for the present we do not much care ; Neither do we here undertake to determine this

Contro-

Controversie, seing that the Animal faculty doth exercise his function both waies, from the same causes, and that the secondary vice doth happen by this affect in the Animal Constitution almost after the same manner. For first, as for the generation of the Animal Spirits, whether the former or the latter opinion be true, it will be all one ; becaus we find no fault in the Brain (unless perhaps some other Diseas be conjoynd) wherein each opinion supposeth the Animal Spirits to be generated. For we have shewed above that the Head ought not to be numbred among the first affected Parts, and that the internal and proper actions therof are not viciated in this Diseas. Then secondly, As for the distribution of the Animal Spirits, whether it be perfected backwards and forwards by that rapid and sudden motion like lightning, or by a motion only made forwards and that too gentle and slow, commonly the same fault occurreth in this Diseas.

For first, Seing that that supposed rapid motion of the Animal Spirits is caused by their passage into the first affected Parts, namely, through the Spinal Martow without the Skul, through the Nerves from thence proceeding, and through the parts into which those Nerves are desributed ; and seing that all these parts in this affect do labor with a cold distemper, with a paucity and dulness of inherent Spirits, the due swiftness of that motion must needs be somewhat retarded. For a cold distemper, as also a benumbedness and penury of Spirits are repugnant to any motion, excepting a constrictive ; some may say that the opinion propounded in the first place doth suppose a wonderful activity and subtilty of the Animal Spirits, wherby they can easily overcome this repugnance. But, however it may be, seing that the parts react through which the Spirits have their passage,

and labor to communicate their coldness and dulness to them, they must needs in some degree retard that activity of the Spirits, lessen their subtilty, and somewhat intercept that expedite transition. Wherefore this opinion being supposed as true, the Animal Constitution will be viciated in this affect, in regard of the retundation of that motion of the Spirits. And that secondarily, seeing that this motion is not interrupted by the primary fault of the Animal Spirits, but by the fault of the first affected Parts, as hath been said in like manner in the Opinion last proposed, wherein the motion of the Spirits is supposed to be peaceable and gentle, they must needs whilst they are somewhat slowly transmitted through the first affected parts, contract some viciousity from the depraved inherent Constitution of those parts, for the same Reasons which we alleaged in the Question immediately preceding. It will be therefore according to this Opinion also, a Secondary vice in the distribution of the Animal Spirits,

Again, As for the Tensity of the very substance of the Brain, of the Spinal Marrow of the Nerves and the Nervous parts in time of waking, which is supposed in the latter Opinion before propounded, there must needs be some defect of a due Tensity in the Spinal Marrow without the Skull, in the Nerves arising from thence, and in the parts unto which they are distributed. For first, A cold and moist distemper is repugnant and advers to that due Tensity, so also is that dulness and penury of inherent Spirits; wherewith the Parts are without controversie rendred slothful, and less apt to perform the Animal Actions; the contrary wherof happeneth, when the aforesaid parts obtain their due Tensity. Secondly, It is manifest by what hath been said, that the Tone of these parts is somewhat viciated in this affect,

affect, by reason of their exceeding looseness, slipperiness, softness, weakness and internal lubricity, which qualities do most evidently enfeeble the just Tensity of the said Parts. Although therefore that the Brain in this affect do for his part yield a due and just influx, yet it is scarce possible, nay it is altogether impossible, that it should communicate that Tensity in a sufficient degree to the Spinal Marrow without the Skull, to the Nerves from thence proceeding &c. because of the distemper, benumbedness and penury of the inherent Spirits. Thirdly, The Symptoms in this Disease that relate to the Animal faculty do most clearly confirm the same thing. For Children afflicted with this Disease do from the very beginning thereof (if they be compared with others of the same age) move and exercise themselves very weakly, and are less delighted in manly sports; but upon the progress of the affect, they are averse from any vehement motion, as they stand upon their feet, they reel, wave, and stagger, seeking after somewhat to support them, and can scarce go upright; neither take they pleasure in any play unless sitting or lying along, or when they are carried in their Nurses Arms: Finally the weak Spine is scarce strong enough to bear the burden of the Head, the Body being so extremely extenuated and pined away. All which things do abundantly demonstrate that the Tensity of the parts subservient to motion is less rigid in this affect than is justly requisite in time of waking. If therefore that due Tensity in time of waking be a part of the Animal Constitution, which we here suppose, that being viciated must without all doubt necessarily constitute a Disease in the Animal Constitution; and seeing that this fault hath no primary dependance upon the Brain it self, but upon the inherent Constitution of the first affected parts, it

ought in all Reason to be reputed a Secondary fault in respect of the Animal Constitution.

Yet here we meet with a scruple. Som may demand, *why the sens as well as the faculty of motion is not vitiated in this affect?* The reason is plain, a far greater tensity, strength and vigor of the Nerve is required to exercise the motive then the sensitive faculty. For almost the gentlest motion of the Nerve is sufficient for sense; but not for motion. So you may observe in the motion of any Joynt, that the Muscles which move it are very hard and stiff, but that hardness being remitted, yet the sensation is easily performed. Nor doth that any way hinder, because that sometimes in the Palsy the sense is somewhat stupified, and the motion remaineth: for the Palsy is an affect very different from this; for in that the primary fault resides in the very Animal Constitution, therefore it may so fall out, that both the sense and the motion may be equally affected. Besides, when perhaps one Nerve doth want the due influx of the Brain, and another which is extended to the muscles of that part doth enjoy it, it may be, that for this cause also the sense may be abolished, and yet the motion may continue; although this case is not so frequent, and that the motion is more usually taken away, the sense remaining. But we have said enough concerning this matter. And thus at length we have produced those things which we have meditated of the integral Essence, both primary and secondary of this Disease; and that with as much perspicuity as a matter so difficult and unsearcht into, would bear: In the next place we shal address our selves to the examination of the causes of this Disease.



C H A P. XV.

The Causes of the Rachites. And first those things which concern the Parents.

✱:✱:✱E have largely explained above both the Primary and Secondary Essence of this Disease. ✱W ✱ And indeed we have sufficiently demonstrated in the same place, the dependance of the secondary upon the Primary Essence. It may not therefore be here expected, that we should again purposely and in particular discuss the causes of the secondary Essence, which we have handled before. It may suffice that we have found out the causes of the secondary Essence. Yet if any cause do occur which at once, hath an influx as well into the primary or secondary Essence of the Disease, we shal not refuse to take notice of it, by the way as we proceed.

But omitting al diligent search into the several kinds of causes, we purpose to contract this our discourse chiefly to two heads. The former containeth the Infirmities and the diseased dispositions of the Parents, which perhaps have so great an influence upon the Children, that they suppetitate, at least a pronels to this affect, and infer an aptitude to fall into it, if they have not actually fallen into it from their very birth. The latter comprehendeth the accessary causes of this Disease; namely, those which happen to children after their birth.

Concerning the causes of the first kind we meet with a Question at the first entrance: *How and whether this Disease may be said to be hereditary?* That we may the more successfully proceed in the determination of this

this question, an hereditary Disease must be distinguished into that properly, and that improperly so called. And indeed an hereditary Disease properly so called, is ever supposed to be preexistent in both or one of the Parents, and from thence to be derived to the Progeny. But an hereditary Disease improperly so called, is not supposed to be preexistent in the same kind, either in both or one of the Parents; yet the same fault must always necessarily precede (perhaps altogether of a different kind) at least in one of them, by vertu whereof a certain disposedness is imprinted in the children, whereby they are made obnoxious to fall into this improperly hereditary Disease.

Moreover, An hereditary Disease properly so called, is twofold; either in the conformation, as when a lame Person begets a lame; a deaf Father, a deaf Son, or a blind a blind; or in the similiary Constitution: as when a Gowty Father begets a Gowty Child. It is to be noted, that in the first kind, there is an hereditary fault inherent in the first affected parts of the Conformation. But in the latter, there is no necessity that a Disease of the same kind with the Disease of the Parents, should be actually inherent in the *Embryon*, from the first formation. But such a disposition imprinted by one or both of the Parents is sufficient, which as the life is lengthened may be actuated into the same, by the concurrence of other intervening causes. Again, an hereditary Disease improperly so called, may be likewise twofold; namely, either in the Conformation, or in the similiary Constitution. In the formation, as when neither of the Parents is blind, pore-blind, lame, &c. yet have begotten a Son blind, pore-blind, or lame, by the very fault of the formation. For in these cases, that very fault which is sensible and conspicuous in the Issue, flowed from some fault in the Parents, although perhaps of a different kind

kind, and so it may be called, though improperly an hereditary Disease. In like manner in the similiary Constitution of the Iflu, there may reside an hereditary Disease improperly so called, as when a Melancholy, sedentary, or an intemperate Parent, begetteth a Child subject to the gowt, or the *Cachexia*, although perhaps the Parent was never troubled either with the one or the other.

These things being thus premised, we approach neerer to the resolving of the Question. And first, we affirm that this Disease is not comprehended under the former species of an hereditary Disease, properly so called. For that consisteth in the formation: but this Disease according to its primary Essence, is a similiary Disease, as we have before demonstrated, and very rarely bewrayeth it self from the very Birth, much less from the very conception and formation. And for the same Reasons, we also affirm this Disease belongeth not to the former kind of hereditary Diseases improperly so called: Which after a like manner consist in the formation of the parts, and are begun presently after the first formation.

Secondly, We say, that so it may com to pass, that this Disease may fall under the second species propounded, of an hereditary Disease properly so called; namely, that which consisteth in the similiary Constitution. Yet we cannot affirm this as certain and undubitable, because the Children which we have hitherto known to be afflicted with this Disease, have not lived to such maturity of years as to beget Children: and therefore we cannot otherwise suppose, then by probable conjecture, whether or no their progeny should be infected with this affect, as it were by right of inheritance.

Thirdly, We say, that in many Children this Disease doth directly fall under the second species of an hereditary

ry Disease improperly so called. For according to the primary Essence of it is a similiary Disease, and although it hath not yet been so long and sufficiently discovered unto us, that we can determin the effects of it, how they wil operate in the Progeny, yet frequently in the present progeny we have observed certain Rudiments of this affect to have been derived to many from one or both of the Parents. So that although neither of the Parents were in their infancy or child-hood afflicted with this Disease, yet som pronels and disposedness to this Disease hath presently appeared in their little Infants, especially in those whose Parents before coition were predisposed by som vitiosity of body, or error of life, to transmit this pollution to their Issue; but those defilements of the Parents which dispose them to propagate Children obnoxious to this affect, we shal by and by reckon up, in their order; from whence also a higher confirmation of this assertion may be deduced.

Fourthly, We say, although the affects of the Parents do frequently imprint a certain propension in the Issue, to fall into this Disease, so that this Disease may be therefore reputed in the second acception of an hereditary disease, improperly so called; yet it very rarely happneth that this Disease doth actually break out before the birth of the child. One amongst us attesteth, that once, and only but once, he saw a Child new born invaded with this Disease. And in this Child the Back-bone, and the neck were so weak, that they could not sustain the weight and greatness of the Head, within three months after it was born, the Child dyed. Wherby it is apparent that he was grievously affected. It seemeth conspicuous by what hath been said, that Infants, however they may frequently borrow from their Parents a disposedness to this affect, are most rarely and seldom troubled with it
be-

before they are born, but if at any time they are so prematurely afflicted, that then the affect is most vehement and grievous. Now a reason of the event of both these may be demanded. To the former therefore we say, that this Disease doth partly consist in a cold distemper of the first affected parts, and indeed an unequal one, as namely, being very cold in the said parts, respect being had to the temper of the Head, and the Bowels: and that hereupon that unequal coldness of those parts, is of great moment in this Disease, and that also in respect of the very inequality. For this contributeth much to that unequal and deficient distribution of the Vital Blood to the parts first affected. Seeing therefore at such time when the *Embryon* is carried in the womb, this inequality of the temperament of the first affected parts may be much corrected and averted by an equal heat, whereby the womb may on every side embrace, and cherish the body of the *Embryon*, it followeth that the gestation doth very much drive away this Disease, at least retard the invasion of it. For the body of the Womb being all about equally warmed with an even heat, and equally embracing and cherishing all the parts of the *Embryon*, doth not easily permit one part to wax colder than the rest, and by that means to be cherished with a defective and sparing afflux of the Vital Blood. Wherefore seeing that that very inequality of heat and comfort, are Essential parts of this Disease, and without which this Disease cannot consist, it is no wonder that the womb strongly resisting these parts of the Disease, and the invasion thereof, doth for the most part protract it, at least during the impregnation.

As for the latter part of the question propounded, namely, *why Infants, who before their birth were infested with this Disease, are more grievously and dangerously afflicted?* We say, according to that *Aphorism* of Hippocrates

crates, that a Disease which holdeth the least congruity with the condition of the Diseased, is more dangerous then the contrary ; as a Feaver threatneth more danger to an old man, than to a yong, and in the winter, then the summer. For a Disease that hath som correspondence & conformity with the condition of the Diseased, requirerh a slighter caus for its introduction : but that which is contrary therunto argueth the magnitude of the caus, which notwithstanding resistance, and opposition, will produce his effects. In the present Disease therfore if the equal and impartial heat of the womb cannot restrain the propensity of the *Embryon* to this affect, but it wil fall into it, som vehement cause must needs be imprinted by the Parents, and the seminal Principals extreemly weakened. Therfore there is little hope when the *Embryon* laboring with this Disease is born, neither wil a prudent Physitian attempt the cure without som Prognostick of imminent danger. Moreover, instead of a *Corollary*, we substitute another Rule, having som affinity with the former, although perhaps it be not yet certain and approved ; namely, that Children by how much the sooner after their birth they are invaded with this Disease, so much the more difficulty (*ceteris paribus*) are they delivered from it. And let these things suffice concerning the Question propounded.

We wil now apply our selvs to the division and reckoning up of those causes which on the Parents parts may produce this Disease. Som of these faults in the Parents relate to the Generation of the seed, wherof the *Embryon* consisteth, others have reference to the *Embryon* now conceived, and yet born about in the Womb. The faults of the Generation of the seed proceed either from the man or the woman, or from the whole Body, or from those parts onely which are dedicated by

by nature to Generation. The faults of the Parents depending upon the whole Body have the strongest influence into the Child, because it transmitteth such matter to the Generation of the Seed, as is unapt for those parts dedicated to that office. We purpose not here to particularize the several faults of the matter of the Seed, but to instance in those alone, which conspire to entitle the Progeny to this Disease. These we reduce to four Classes.

The first Classis containeth a cold and moist distemper of the matter, wherof the Seed is Generated. This chiefly resulteth from a cold and moist distemper of the Parents, unto which we also refer a predominancy of ill juice, especially that which is *Phlegmatick* and waterish also a *Cachexia*, and *Dropsy*, and perhaps the Green-Sickness, which som cal the white Feaver, not sufficiently subdued before conception; all which affects manifestly help to constitute a waterish matter, both cold and moist in the Genital Parts, which is not only in general less apt for the Generation of the Seed, but it particularly inclineth to a condition of this Disease; a part of whose primary Essence consisteth in that very cold and moist distemper, as we have already proved. Moreover, we may perhaps hither reduce the Scurvy, the *French Pox*, & the Jaundice, in which affects the Blood also is polluted with filthy excrementitious humors, and corrupt exulcerations, which cannot easily be changed into laudable and fruitful Seed.

The second Classis containeth containeth the penury of Natural Spirits, wherby the good Seed should be Generated. For a Spirituous Seed cannot flow from such a kind of matter. The causes which suppetitate that impure matter to the Parts of Generation are the dried and extenuated Bodies of the Parents, wasted either by long

long abstinence, or by som vehement evacuation, as by vomits, lasks, Lienteries, Dysenteries, Hepatical Fluxes of long continuance ; by an excessive Hemorrhage from any part, by violent sweatings, or any Chronical Diseases, which wasteth the strength and is not repaired before Coition : especially, a Consumption, a Hectick Feaver, an indigestion from any kind of Cause. Lastly, from a defective and imperfect Concoction of the last aliment, or the fault of any part. For in such cases the matter which is separated to the parts subservient to Generation, is destitute of a competent plenty of Natural Spirits, wherupon the Parts preparing and concocting the Seed cannot perfectly correct this defect, and ejaculate such Seed as is sufficiently abounding with Spirits. Seing therefore that a considerable part of this Disease consisteth in the paucity of Natural Spirits, it cannot otherwise be, but that the issue propagated by such a crude and almost Spiritless Seed, should be tainted with a certain Natural Propension to this affect, even in their first rudiments, which afterwards upon the concurrence or other causes, is easily deduced into Aft.

The third Classis containeth the benumbedness or stupour of the matter transmitted to the Generative Parts, wherof the Seed is produced. For not only the solid parts, but also the whol Mass of Blood, and the humors therein contained are obnoxious to that same stupour. And from hence it is that Physicians being to render the causes of Diseases, do use to say, that the humors and also the Blood are too fluid and moveable and unduly vehement; somtimes on the contrary that they are unapt for motion, less fluxible, and unactive beneath a Mediocrity, & in respect of this thing also a certain Mene is most wholsom : but more things relating hither may be seen above. We will here only prosecute those faults

of the Parents from whence this defect of vigor and activity in the matter of the Seed doth arise. These therefore are first the soft, loose, and effeminate Constitution of either or both the Parents, indisposed to strong and Masculine exercises. Secondly, an overmoist and full diet and epicurison, obnoxious to frequent crudities. Thirdly, A delicate kind of life abandoned to ease and voluptuousness, slothful, and rarely accustomed to labor, danger, and care. Hither you may also refer a total defect of manly Exercise immoderate sleep, especially soon after mate, and any kind of sleepings whatsoever, a sedentary, speculative life, intent upon soft and quaint Arts and Sciences, as Poetry, Musick, and the like, to these may be further added a dayly frequenting of Comedies and other Plays, an assiduous reading of Fables, and Romances, and instead of manly and laudable Recreations, a loose expence of time in Carding and Dicing. Hither also belong the neverfailing fruits of a lasting peace and plenty, such as security, indiligence and the like. All these enumerated faults do manifestly contribute a share to introduce a laziness and Effeminateness in the parts. Seing therefore that the Blood, together with the humors contained in it, doth in its circulation wash all those stupified parts, it cannot otherwise be, but that as it gliderh along it must participate some such alteration; and seing that some portion of the transient Blood affected with this stupefaction, is transmitted to the Generative Parts, with the very matter wherof the Seed is Generated, it is easie to infer that that Child which springeth from such principals must inwardly contract at least some propension conformable to the sluggishness, and stupour of its Native matter, and that that propension, after-Birth when the preservation is taken away by the equal cherishings

of

of the Womb, is by divers causes without difficulty deduced into act, wherefore seeing that such a dulness is a part of the Primary Essence of this Disease, it followeth that in such vitiated principals there lurketh a propensity to this affect, derived from one or both of the Parents.

The Fourth Classis containeth the vicious Dispositions (if any such occur) of the Parents, who in their Childhood were infected with this Disease. For these would transmit into the Children a continuation of an hereditary Disease properly so called. But because, as we have said, it is not yet manifest whether the Parent afflicted with this Disease in their infancy shall beget children therewith affected; besides, because the faults of the Parents may be conveniently referred to any one of these Classes aforesaid, or to many, or indeed to all of them, it will be fruitless to insist longer upon them. Therefore having reckoned up the faults of the Parents which depend upon the whol Body, in the next place we proceed to their faults which peculiarly reside in the Genital Parts.

These faults are sometimes a cold distemper, sometimes a moist, when by reason of too much humidity they are loosned or weakned, wherupon they ejaculate either an unfruitful deed or such as is propense to this Disease, sometimes those parts are infested with a virulent, vicious or waterish *Gonorrhea*, and they excern a Seed not sufficiently elaborated: the same must be said of the white and red Fluxes of Women. Again, some things outwardly applied to those parts have reference hither; as Ointments of Hemlock and other *Narcotical* things, especially if they be often anointed with them, in like manner Oyntments that are incorporated with white or red Lead, Chalk of Lead, Litharge, Sugar of Saturn and

and the like, dayly. and for a long time adhibited to those parts. For such as these blunt the activity of the inherent Spirits in those Parts, and introduce a certain dulness in them, which being communicated to the Seed prepared in them disposeth the progeny to this affect.

At length we have finished our intended enumeration, if not of all, yet at least of all the most principal causes which happen before Conception about the Generation of the prolificative Seed, and have any concurrence to produce this Disease, or to dispose to the production thereof. Now follow the faults and errors of the Mother in the time she beareth the Embryon in her Womb, which also must be reputed among the causes of this Disease before the Birth.

First, There hapneth a cold and moist distemper of the Womb it self, which (as were we silent is easily manifest to every one) may most readily be communicated to the Embryon by the perpetual contact of the Womb.

In the Second place, All those things offer themselves which suppeditate to the Embryon crude and impure Juyces converted by excrementsions and corrupt humors instead of laudable aliment. Hitherto principally belongeth the unwholsom and preposterous diet of Women with Child, especially inclining to moisture, coldness and the heaping together of crudities. The same things also happen by the imperfection and defect of the first or second Concoction, especially when they are not excerned by vomit or some other evacuation of the Crudities from thence proceeding, but are at length transmitted with the Mothers Blood for the aliment of the Embryon. Besides; if a moist and cold Disease, as a cold and moist distemper with the matter, an ill digestion

gestion, a *Cachexia* or Dropsy, &c. do invade a woman with Child after Conception, it may thereupon easily happen, that the impure aliment also, which nourisheth and cherisheth the Seeds of this Disease, be dispensed to the *Embryon*.

In the third place are to be reckoned all those things that defraud the *Embryon* of du aliment, as any excessive evacuation, especially a lashing flux of Blood in any part; also a rash opening of a Vein, or *Phlebotomy* that exceeds in quantity. The suckling of another child may also divert the afflux of sufficient aliment from the Womb towards the Breasts. Hitherto likewise belongeth inordinate fasting, or any indigestion in the Mother, any inappetency after meat, or defect of concoction. Moreover, an acute Feaver hapning to a woman with Child, besides other inconveniences, may also defraud the Child of du aliment; so also an Heetick Feaver. All these things do not only infer to the *Embryon*, a dejection of Vital Spirits, and a defective nourishment, but also they cause a want of natural Spirits. For the Naturall Spirits are wasted and dissipated without due nourishment, and are also destitute and disappointed of necessary reparation. Seing therefore that a part of the Essence of this Disease consisteth in the defect of Natural Spirits, som disposition to this affect must need be bequeathed to the off-spring from the causes aforesaid.

4th. & lastly, excessive sleepines of women with child, slothfulness, eas, any vehement labor and exercise after Conception, do also contribute their share. For although violent motions and actions of any kind are forbidden to women in such causes; yet moderate labors, watchings and exercises which offer no violence to the womb, or provoke to abortiveness, do not only conduce to the health of the Mother, but in som degree they drive a way

way that dulness from the *Embryon*, and augment the heat, vigor and activity of it. And thus we put an end to the first Chapter of the causes of this Disease before the Birth. Those which happen after the birth shall be the subject of our next examination.



CHAP. XVI.

The Causes of this Disease incident to Children after their birth.

WE have noted in the precedent Chapter, that Infants from their first Origin are seldom afflicted with this Disease, but by reason of the Causes there rehearsed, that they are frequently affected with a natural disposedness, and propension to the same. We shal now prosecute those causes which are apt to actuate that Natural disposition after the birth, or newly and fully to produce this Disease. For it must be known that the same causes which may actuate that predisposedness to this Disease, may produce this Disease a new, if they be sufficiently intensive in their degree. And therefore we confess that those children which are prone to this Disease from their Nativity are easily affected; but that other which are free from al Natural corruption fall not into the same but upon more potent causes; and yet those causes are the same for their kind and differ only in the degree. We therefore thought it needless to speak of these things distinctly and apart: it

may suffice that we have spoken of them indiscriminately and together.

At the very entrance a Question there is which importunes a Resolution; namely, Whether Contagion may be numbred among the causes of this Disease, and therefore whether this Disease in a proper and right understanding be a contagious Disease, indeed he that considereth this Disease unknown to the Ancients, how it first invaded the Western Parts of *England*, and in few years hath been since dispersed all *England* over, will at the first thought easily judg it to be contagious, and to have been spread so far and wide by the infection of it. But the matter will seem to be otherwise to him that will consider it more intently, For although this Disease may in some manner endeavor to imprint an affection like unto it self in other Bodies, yet it scarce advanceth so far that it can totally produce a Disease of the same kind. For perhaps it may in one some slight inclination in another Body, yea, sometimes perhaps it may accelerate or hasten the invasion of an affect in a Body highly predisposed unto it, yet it cannot therefore deserve the Name of a Disease properly contagious. For all Diseases conspire to change and assimilate those Bodies which are neereſt to themselves, yet that is not sufficient to denominate Diseases contagious. For to constitute a contagious Disease properly so called it is further required that out of it self it propagate a certain Seminal fermentation of it self, which secretly insinuating it self into other Bodies, may by degrees introduce into those Bodies a Disease of the same Species. But this Disease containeth no such fermentation in its essence, neither is it secretly propagated by a precedent emission of Seed from it self which may imprint a Disease of the same Species in the adjacent Bodies.

dies. For we have already often said, That the first essence of this Disease consisteth in a cold and moist distemper, and in a dulness and paucity of inherent Spirits, which affections if they endeavor to assimilate any Bodies that are neer them, they attempt and undertake it by open violence, and not by snares and fraudulence or a preimmission of secret little fires. In like manner if you reflect upon the Secondary Essence thereof, neither the viciated Tone, nor the depraved Vital nor Animal Function, nor the Organical faults are found apt and fit in this affect to insinuate themselves into other Bodies, and to propagate their own Species. Finally, if we will consult experience, the matter will quickly be vindicated from all doubt. For we frequently observe Children either of the same age, or very neer to the same age, be brought up in the same House, wherof one or other of them is perhaps afflicted with this Disease, whilst a third or many amongst them do escape it. Yea, We have known Children not only educated under one common Roof, and delighting in the continual and mutual society of one another, but daily meeting at one Board and lying together in one Bed; wherof one who hath been ill affected with this Disease hath not infected any of his companions either by feeding or lying together. Which could scarce possibly happen in a Disease properly contagious. Wherefore Contagion being excluded from the Catalogue of this Disease, we will address our selves to the finding out of such as are more true and unquestionable. We divide the causes which produce this Disease after Birth into two Classes. The first containeth the errors which procure it in the use of the six nonnatural things. The latter comprehendeth the precedent Diseases of divers kinds, which are wont very often to leave behind them

them some Inclination to this affect.

As for the former Classis concerning the abuse of the six non-Natural things, so far as they relate to this Disease, seing that children are seldom discomposed with any vehement passions of the mind, and can thereupon very difficultly fall into this Disease. Again, in regard that the use of Venery appertaineth not unto them; we will reduce and limit these cases to the five subsequent heads. To the Air, also to what things soever extrinsically occur, or are applyed to the body, to meat and drink, and such things as are inwardly received, to motion and rest, to the kind and manner of life, to actions and exercise, to sleep and watching; lastly, those things which are preternaturally retained in, or severed from the body. These several things we shall examine in the propounded order with all convenient brevity.

Of the Air and such things, as happen outwardly.

A cold and moist Air doth powerfully contribute to this Disease. For seing that it doth more easily steal into the external and first affected parts in this Disease, then into the hidden and fenced bowels, it directly helpeth to imprint in those parts that unequal; namely, that cold and moist distemper. The constitution of this kind of Air, is chiefly predominant about the beginning of the Spring, at which time the Nurses ought to be cautious and circumspect. Hew they too confidently expose their children, which are subject to this affect, to the injuries of the Air; as also when the Air is cloudy, thick, rainy, and full of vaporous exhalations. Hereupon places near the Sea, great Marishes that are obnoxious to much rain and showers, and fed with a great number of Springs, are wont to be (*ceteris paribus*) very fruitful of this affect.

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In like manner houses neer the banks of great Rivers and Ponds or Meers are for this purpose condemned. Moreover, frequent bathing and washings with sweet water, although they be applied actually hot, yet in regard that they are potentially cold and moist, they are also justly culpable; for they do in som sort communicate their distemper unto the parts whereunto they are adhibited, and more or less caus a softness and looseness in those parts, and make the circulation of the Blood too slippery.

Hither we may also refer cold and moist liniments, as also such as are loose and slippery, being too often continued in that tender age, especially about the Spine or the Origin of the Nervs: lastly, soft linnen cloaths, if they be not wel dried, they cherish the roots of this Disease. For this caus amongst others, it hapneth that the Children of poor people are the less obnoxious to this Disease, because namely, for the most part they are enwrapped in course cloaths, and woolly integuments, each of which doth rub and tickle the parts thereby exciting and augmenting the inward heat, and irritating a more copious afflux of the Vital Blood unto the habit of the Body, and are therefore very effectual to banish this Disease. But the softned fine linnen doth neither irritate the heat into the external parts, nor laudably cherish it. For if they chance to be for som short space of time removed from the touch of the parts, they presently loose their warmth, and at the next touch they convey a sense of coldness into the parts. Wherefore such linnen cloaths being in the number of those things which are dedicated only to extrinsecal application, and seing that they are hurtful by their sole coldnes & softness, we have referred them to this first Classes of causes, & the first part thereof

which containeth cold and moist things outwardly occurrent.

In the second place the Air being infected with any particular infection, as noxious Metalline exhalations, which for the most part fight against the inherent Spirits of the parts, by a kind of venomous malignity, and do either extinguish them, or drive away and dissipate them; withal they dissolve the Bone of the parts, and the pulsficative force, especially in the parts external, where they first happen, they at least diminish, if they do not weaken it, and affect it with a languidness. These things are principally caused by exhalations from Lead, Antimony, Quick-silver, and the like. Moreover, ointments made of the same, are almost alike perillous, if the first affected parts be frequently and unseasonably anointed therewith; although perhaps these things do also belong to the fourth title of this Classis. Finally, we have observed som Children who have been anointed with *Mercurial* Unctions for the Scabs, to have fallen afterwards into this Disease.

In the third place an Air vehemently hot and subtle, extremely attenuant and dissolvent, may likewise be numbred among the causes of this Disease, because it allureth forth, dissipateth and consumeth the inherent Spirits. In like manner hot liniments and especially discussive withal, Chymical oils distilled and not sufficiently corrected by the commixture of things temperate; for these in such a tender constitution of the parts do easily melt and resolve the Spirits into a volatile and Airy thinness, and by consequence infer a penury of Inherent Spirits. Hither also belong sharp, saltish, hot and discussive Baths, especially, if they be unseasonably and unmeasurably used, for these no less then the former do wast and consume the Spirits.

Fourth-

Fourthly and lastly, An Air filled with *Narotical* vapors or exhalations, and baths, fomentations and *Liniments* made of *Soporiferous* and *Narotical* ingredients, as *Hemlock*, *Henbane*, *Opium*, *Nightshade*, and the like, and externally applied, are very fitly reducible, also to this *Classis*. For they easily introduce a benumbedness into the first affected Parts, into which they first convey their force. Which benumbedness is not only it self a part of the first *Essence* of this *Disease*, but it also easily dulseth and diminisheth the *Vital influx* in those parts, and consequently is also a cause of that part of the *Secondary Essence* of this *Disease*, which consisteth in the *Vital Constitution*, which thing we have already explained more at large. And thus much of things outwardly occurring.

Secondly, *Of Meat and Drink, and things inwardly taken.*

To this Title there belong first aliments of any kind which are too moist and cold, for these things manifestly cherish the distemper, wherein a part of the *Essence* of this consisteth. Hither therefore we refer most kind of *Fish*, and crude *Meats* which are not well prepared by *Coition*; also all those things whatsoever they be which cause a defect of concoction in the *Ventricle*. Therefore the feeding upon new *Meat*, before the former *Aliment* is concocted, is very hurtful for *Children* disposed to this affect; and in this respect, a plentiful *Diet* is altogether to be abandoned, and a thin spare *Diet* ought to be observed, for too liberal feeding doth overwhelm and choak the heat, and therefore must needs accumulate many crude and raw humors. And perhaps this one may be reputed among the especial causes,

es, why this Disease doth more frequently invade the Cradles of the rich; then afflict poor mens Children. In like manner cold & moist Medicines taken inwardly, and also such as are laxative, and endued with an internal slipperiness, do manifestly relate hither. For these things do not only infer a like distemper, but they produce a *Relaxation* in the *Tone* of the parts, and affect them with an internal slipperiness, and in a word they render the current of the Blood through the first affected parts over slippery and easie.

Secondly, Nourishments that are too thick, viscous and obstructive belong hither, especially becaus they interrupt the equal distribution of the Blood. Hither we refer flesh hardned with smoke, and seasoned with much Salt; in like manner Salt Fish, and Cheese almost of any kind plentifully fed on. Bread newly taken out of the Oven, and not yet cold; also almost all sweet things condited with Sugar, unless they are withal tempered with Wine, or cutting, or attenuant. Obstructive Medicines likewise of any kind belong hither, unto which we may further ad such as are *Pastotical*, and whatsoever being drank induce a benumbedness into the parts.

Thirdly, Nourishments that are of an extream hot and biting quality, sharp, & corrosive, as old & strong Wines, especially being drank upon an empty Stomach, Meats also that are seasoned with much Pepper and aromatical Sawces, must be connumerated among the reputed causes of this affect. For these things in such a tender consistence of the Parts, do easily feed upon and devour the inherent Spirits. The same thing is also affective by Medicines that are immoderately hot and discussive, yea, these are far more powerful to hurt, becaus they more quickly and forcibly spoil the inherent Spirits, than the prementioned Nourishments.

Thirdly,

Thirdly, *Of Motion, Rest, Exercises, and Affections.*

Motion and Exercises, if they exceed a mean, they dissolve the Body of a little Child into a profuse Sweat, and withal they somewhat dissipate the inherent Spirits of the Parts, and therefore for that reason they may conspire the introducing of this Disease: although we conceive it falleth out exceeding rarely, that Boys are infected with this Disease, wherof we discours. But a defect of Motion and want of Exercise doth most frequently, yea and most effectually concur to the production of this affect. For the Spinal Marrow, and the Nerves from thence arising, and the other first affected parts, serve chiefly for Motion and Exercises. A stupidity therefore and sluggishness of those parts, is a caus that neither their inherent heat is sufficiently cherished, nor that heat extenuated, nor the cold distemper stealing in banished, nor the excrementitious, and superfluous moistures expelled by a due transpiration, but it permitterh them to be affected with a certain softness, looseness, and internal lubricity, wherupon the Arteries also distributed unto them are faintly irritated, yield a dull and slothful Pulse, neither do they render the parts somewhat turgid or swelled, but leave them lank and subsiding. By which means the circulation of the Blood becomes slow and lesned, and more slippery than is meet, the production also of the vital heat must thereupon be necessarily be feeble and weak, all which considerations do sufficiently evince that this is an efficacious caus of this Disease.

Fourthly,

Fourthly, *Of Sleeping and watching.*

We grant that Children should sleep oftner and longer than Men ; yet if it be excessive even in Child-hood the matter is the same as in defect of exercise and motion. For sleep is a certain rest and privation of watchings or of the exercise of the senses. But watchings consist in the very exercise of the senses, according to *Aristotle* in his Book *de Som. & Vigill.* Wherefore the evils that we have described to arise from the defect of motion and exercises, the same also must needs happen from immoderate sleep. On the contrary, in that tender age, inordinate watchings are no less noxious. For they do not only retard the concoction of the aliment, but they likewise taint the Blood with a kind of acrimony, and consequently dissipate the Principals of the Natural Constitution of the first affected parts, and without difficulty introduce a defect of inherent Spirits.

Fifthly. *Of things preternaturally cast out and retained.*

All the internal causes of Diseases might be perhaps not incommodiously reduced to this title. For any thing whatsoever contained in the Body, and preternaturally altered, as they are preternatural, they indicate their ablation, and may so far forth be reputed among things to be cast out, which are nevertheless preternaturally retained. But we more rightly grant, that all internal causes may be distinguished into two kinds : one wherof containeth those things which are preternaturally retained and cast out : the other, such things as are contained in the Body being preternaturally altered. For these latter are not only taken away by casting out, but also by

Altera-

Alteration, they may be reduced to an agreeable proportion of Nature. However it be, there is a great affinity between the Humors vitiated by Alteration, and the excrementitious Humors which are retained. For there are so many and such various ways of casting out in the Body, that scarce any humor can be imaginably produced by Alteration, which doth not properly relate to the secretive and excretive faculty of some Bowel, or some other part and is destinated to be severed and evacuated from it; and therefore though the errors of the first concoction are scarce corrected in the second or third, by Alteration, yet they may be mended by local motion, or excretion, made from some part of the Body, the unprofitable parts being separated and rejected. In like manner the mass of blood being any ways preternaturally altered, or infected with some Humor, the peccant matter which cannot be otherwise subdued by Alteration, is quickly exterminated perhaps by excretion made from some part or Bowel (unless withal the secretive or expulsive faculty thereof be hindred) therefore it must needs be of great moment for a Physitian to know what Humors are particularly predominant in any Disease, and by what determinate ways they may be most properly spied out according to the intent and purpose of Nature.

For there are as many subordinate species of things spied out, as there are distinct substances of the Bowels and other parts destinated to that office in the Body. For it is credible that the Liver doth cast out one thing, the Kidnies another, the Sweet-Bread another, the Spleen another, the Stomach and Guts another, the Lungs another, the Brain another, the Stones, the Matrix, the Kidnies, the Kernel under the Canel Bone, the glandulous parts of the *Larynxes*, the Throat and Jaws another,

the scarf Skin and the Skin another. For it seemeth scarce admissible, that Nature should build and prepare for her self Organs of different kinds, and yet should make use of divers of them for the performance of one and the same action. Therefore when the excretion of any of the said parts hapneth to be restrained, a certain peculiar filth will flow out from thence into the mass of Blood, and so there will be so many differences of things preternaturally retained, as there are kinds of parts inservient to particular casting out: and in like manner there will be as many kinds of vitious excretion, either by excess, defect or depravation; as there are divers ways thorough which the excretion may be made.

If any man demand, Whether the several kinds of things excerned be sufficiently discovered and understood by us: We answer, that an exact knowledge is desired of that particular humor which is to be cast out thorow the new Vessel of the Sweet-Bread, then in the next place, what is cast out by the Kidnies, the Kernel under the Canel Bone, and the glandulous parts of the *Larynx*: yea, perhaps it is yet scarce sufficiently known, what is rejected by the Spleen. For this cause therefore amongst others, it seemed good unto us to supersede in this place any high and accurate disquisition of things discerned and retained, either in relation to the parts and ways whereunto they belong, or in order to the present affect, and rather to insist on that fourfold division of Humors made by *Galen*; namely, into Choler, Phlegm, Blood, Melancholy, adding only undue transpiration and sweating. For although we may doubt, whether this division can deduce the humors to the subordinate Species, (as we have noted above) more then four parts distinct in the species are evidently dedicated to the casting out of the humors; yet seeing that this division
of

of the Humors is not only approved by all Classical Physicians, but that it is likewise profitable in it self, and at least reduceth the Humors to certain Heads or Kinds, (however perhaps every kind may comprehend under it several species) we are resolved for the present to insist upon it, and so much the rather, because under a general notion it very fitly conjoyneth and containeth both things altered and preternaturally contained within, and also things to be spied out which are not yet excerned, and in that respect it will ease our burden and contract our work. For whilst we make our proceedings in this manner, it will be needless to institute any other peculiar Chapter of the Causes of this Disease, namely of this altered which are preternaturally contained, seeing that they are comprehended, as we have said, under this Title.

We reduce therefore the internal Causes of this Disease (whether they be excrementitious humors retained, or viciated by alteration) either to Choller, or to Melancholly, or to Flegm and a Waterish humor, or an undue Transpiration and sweating, for the Blood properly so called is in this affect scarce observed to be faulty.

You may object, That Practicall Physicians do in this Disease commonly prescribe the opening of a Vein in the hollow of the Ear, observing that Evacuation to be very profitable, which Reason could hardly admit, unless the Blood were in some degree peccant?

We answer, That this Remedy is available, not in respect of the universal plenitude of the Blood, but by reason of a peculiar plenitude of the Head it self. For we have already shewed how that the Blood is unequally dispensed to the parts of the Body, and indeed illiberally to the first affected parts, but to the Head superabundantly.

dantly. Therefore although there be not an universal redundancy of the Blood in this Disease, yet in respect of the particular Plenitude of the Head it self, such a particular emptiness, is perhaps profitably instituted those outward and smal Veins of the Ears being cut. You may reply that we by this Answer do indeed decline the universal *Plethora*, but that we grant a particular one of the Head, which ought no less to be esteemed a cause of sickness, We answer, That we have at large explained this fault of the Blood, when we discoursed of the unequal distribution of it, unto which place it properly belongeth, seeing that it is a cause of the Secondary, not of the Primary Essence of this Disease; and therefore a vain and superfluous repetition thereof ought not in this place to be expected, We will now therefore proceed to our purposed disquisition of the Humors, and likewise the Transpiration aforesaid.

First Choller (whether by this word you understand that excrementitious humor in the little Bladder, and the Chollerick pore, or a hot, dry, sharp, and bitter part of the Mass of Blood, or that unfavory humor that tasteth like stinking Oyl, begotten and flowing in the Stomach by some corrupt aliment, especially, that which is fat, addust, or salt; or certain sharp and corrosive Excrescences produced in the Body by corrupt Blood) if it abound and luxuriate in the Body, very probably be a cause of this affect.

For although it may rather seem to impugn that cold and moist distemper, which is a part of the first Essence of this Disease; yet in regard that it is apt in some sort to hinder the nourishment of the Parts, either by a vehement irritation of the expulsive faculty, or by attenuation of the aliment, and to extenuate and waste the very inherent constitution of the Parts, and by consequence

quence to consume and dissipate the Natural Spirits, it may not unjustly be numbred among the causes of this Disease. For every one knows that Persons of a Choleric Constitution are lean, and of an extenuated habit becaus of the Reasons aforesaid. Secondly, A Melancholly humor (whether you understand the Earthy Portion of the Blood, or that saltish or tartar like matter excreted in and with the Urin, and when the Urin groweth cold, incorporating into little Sands; or that sower humor powred into the Ventricle perhaps by the Spleen (though not through that short Veiny Vessel, as the Ancients beleevd) or those terrene Parts of the assumed Aliment, which are evacuated by siege with the other Excrements) understand either or any of them, if this humor aboundeth and be not purged out after a due manner, may be blamed as a caus of this Disease. For first, that humor which is the more Earthy part of the Blood, if it exceed a just proportion in the Mass of Blood, it rendreth it unapt to nourish the Parts, especially those that are first affected; for the first affected parts are of a more noble texture than the substances of the Bowels, or the bony parts; and therefore we have already noted how the *Parenchymata* of the Bowels and the Bones do easily admit nutrition, and by a way like unto digestion; but those former parts do require a far more exquisite secretion & elaborated assimilation. And this is the Reason that the fleshy parts of the Bowels are rightly imputed among the impure and grosser aliments, namely, Becaus they are nourished with a cours Blood, and not accurately elaborated before the Union. Secondly, Any great accumulation of Saltish, and Tartar like matter is an Enemy to Nutrition, and is rather dissipative and devouring than favoring augmentation. Thirdly, The sower Humor of the Ventricle is

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totally

totally ravenous, and as it were hungerstarved, and perhaps where it aboundeth it easily communicateth to the Blood such another Depredatory quality ; Fourthly and lastly, The Terrene Dregs of the Belly may if they be inordinately retained, taint and infect the Chylus, and render it unapt for the nourishment of the part. Finally we grant, that every propounded kind of Melancholly superfluously coaugmented or preternaturally retained, doth not primarily, properly, and directly concur to the production of this evil ; but nevertheless we are of opinion that indirectly, and after the manner propounded it may contribute something to the generation of it,

Thirdly, Flegm (whether it be taken for the moiſter and colder part of the Maſs of Blood, or for the wheyiſh part thereof, or for the ſlow humor of the Stomach and Guts, or for the Spittle, or for the Snot of the Noſtrils or Jaws, or for that peculiar humor, which perhaps the new Veſſel of the Sweet-Bread doth uſe to evacuate) however you take it, if it be retained or abound in the Body, it hath a direct reference to this Diſeaſe, and properly deſerveth to be called the cauſe thereof. For this humor is cold, moſt, ſlow, thick, benumbed, little ſpiritous, loſt, and affected with an internal ſlipperineſs ; all which things do exactly comply with the primary and ſecondary Eſſence of this Diſeaſe as they have been propounded. Wherefore upon a ſuperfluous accumulation of this humor, ſeing that there ſucceedeth a conſpiracy to the production of this affect, it ought juſtly to be eſteemed a proper cauſe and a Primary Agent.

Befides theſe humors undue Tranſpiration, as alſo immoderate or defective ſweating may be ſometimes numbred among the cauſes of this affect.

For excessive Sweating, as also immoderate Transpiration, doth dissipate the Spirits, and withal dissolveth the parts, especially the external which in this Disease are the first affected, and the inherent Spirits being consumed it easily leaveth a cold distemper behind it. For to a just excitation and conservation of the heat of the parts there is required a certain due and regular strife of the exhalations between breathing, which if it prove deficient, the actual heat also (because it partly consisteth in this strife) becomes very feeble and languid, and the parts are easily exposed to a cold distemper. But we have already spoken of this matter at large. On the contrary, Sweat preternaturally restrained, as also a very small or lessened Transpiration, doth easily kindle a Feaverish heat, and therefore it likewise injureth the Spirits and dissolveth the parts, and rendreth them afterwards easily obnoxious to a cold distemper.

Finally, That we may comprehend all in a word, Any humor excerned above Reason or Measure doth easily introduce a colliquation of the parts and a dissipation of the inherent Spirits, and consequently dispolet the Body to this affect. And let this suffice to have been spoken of non-Natural things, and the causes of this Disease thence arising:



CHAP. XVII.

Precedent Diseases which may be the Cause of this Disease.

These Diseases, in respect of their proper Essence, ought only to be called by the name of Diseases, but in respect of this Disease they may rightly pass under the notion of causes of Diseases, because they leave it behind them as one of their Effects. Yet although many of them (as they relate to the Parents and so imprint a Natural pollution in the Off-spring) are rehearsed above, nevertheless, by right they here deserve their consideration, yet in a different respect and order. These Diseases we reduce to three Kinds or general Heads.

First, To Diseases that have some affinity with this affect.

Secondly, To Diseases that extenuate the Body.

Thirdly, To Diseases inducing a stupor and dullness in the first affected parts.

Of the First Kind.

Diseases having an Affinity or holding Congruity with this we call those who at least in part consist in the same with the Essence of this Disease: of this kind are any cold distemper, or any moist distemper, also any cold and moist distemper. For a part of the first Essence of this Disease includeth a cold and moist distemper, and

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So those distempers do partly agree with this Affect. Hither also belong a Phlegmatick *Cachocymy*, a Melancholy and a mixt; an obstruction proceeding from such like humors, a *Cachexia* and a Dropsy. Yea, we may likewise refer hither in regard of their affinity, those Diseases wherein the inherent Spirits are somewhat consumed; for a part of the Essence of this Disease consisteth in a scarcity of those Spirits, but otherwise they are more aptly referred to the second kind. In like manner the Diseases wherein the first affected parts are benumbed, & stupified; may likewise in respect of their affinity, be hitherto referred, although they belong more properly to the third kind of Diseases. Moreover, those Diseases wherein the *Tone* of the parts is infeebled and loosned must here be listed, for they include a part of this Disease; namely, that which consisteth in the looseness, litherness, internal slipperiness and softness of the *Tone*, as they are above described. The Philosophers say, that the Elements which agree in like qualities, are easily changed one into another; by the same reason that these Diseases which partly agree in the same Essence do easily admit a reciprocal change from one to the other. So we see a quotidian Ague, which agreeth with a putrid Feaver in a preternatural heat, upon every slight Cause degenerate into it. Yet it must here be noted, That great Diseases are not so easily changed into small, as small ones into great. Besides, not all Diseases which perhaps participate alike of the same Essence, are with an equal facility reciprocally changed. For some Diseases are more subject to change into others, with whom in part they have some agreement, than others: And that for other Reasons beside the said agreement, however it be, if a cold and dry distemper should happen to a Child, that would easily change into a cold and moist;

both

both in respect of the congruity of each Disease to cold, and also a peculiar inclination of that tender age to moisture. For by reason of the coldness, the digestion becomes imperfect, and hereupon crudities or crude humidities are engendred, which a cold distemper in so tender an age would easily and immediatly follow. Moreover, a cold and moist distemper in regard of the coldness would make a slow Pulse, and in regard of the moisture would make it the more slippery, and the less viscous, wherupon the Vital heat being diminished, a benumbedness and dulness by little and little would steal upon the Vital Spirits. Finally, in respect of that slippery retention arising from the internal slipperiness of the parts, and by reason of the weak concoction, the inherent Spirits of the first affected parts, would also by degrees be diminished, and so by little and little after this manner the perfect Essence of this Disease will be introduced.

Of the second kind.

Most Diseases making lean, or any ways extenuating the Body, although perhaps they no way participate of the Essence of this Disease (like the Diseases of the first kind) yet they do dispose the Body to the invasion of this affect, and may also leave it after them. For all great quotidian Diseases, in process of time do extenuate the Body, waste the inherent Spirits, and dissolve the *Tone* of the parts; and this attrition and attenuation of the parts doth chiefly refer to the first affected parts in this Disease. For as we have already asserted, the substance of the Bowels are not so easily subjected to dissolution or dissipation. But in the dissected Carcasses of those who have dyed of Chronical Affects, the Bowels

are

are observed to be no less ; yea, many times much bigger when the external parts (which in this Disease are first affected) are for the most part made lean with the vehemency of the affect. And therefore seeing that extenuating Diseases, do chiefly communicate their force into the first affected parts, it easily falleth out that in Children they help to introduce this Disease. For the inherent Spirits of the first affected parts being very much wasted, a cold distemper must needs follow, which by reason of the crudity is (as we have said above) received by a moist one and a benumbedness ; because the heat, activity, and vigor of the parts do chiefly depend upon the plenty of Spirits. And thus we have exhibited the manner wherby this Disease doth follow and as it were tread in the footsteps of other foregoing affects of this kind, which we now further subdistinguish into three Classes.

The first comprehendeth Diseases extenuating and consuming the habit of the body, by ways insensible ; hither are referred almost all Feavers, especially the *Hestick* and Consuming, an Ulcer of Lungs with a putrid Feaver. Also any continual Feaver that is violent, as a burning, malignant, pestilential Feaver, a Pleurisie, and an inflammation of the Lungs, also the small Pox, and the Meazels when they grievously afflict the Patient. In like manner intermitting Chronical Feavers. Lastly, all Chronical Feavers that torment with vehemence do the same. The second Classis containeth Diseases consuming by manifest passages, and evacuating the solid substance of the parts. Hither you may refer immoderate vomiting, a *Lyentery*, *Dysentery*, *Lask*, the Hepatical Flux, the *Diabetes*, any profuse Hemorrhage or Bloody Issue, any excessive sweating, any great Ulcer in any part, eating deep, and dayly casting out much matter.

For al these Affects do evidently extenuate the habit of the body, and cause the introduction of this affect.

The third containeth the Diseases which are said to extenuate the substance of the parts not directly, but by consequence : as al Diseases interrupting concoction or the distribution of the Blood. For these prohibit the reparation of the parts continually fed upon by the Vital heat. Hereupon several Diseases of the Ventricle, Guts, *Mesentery*, Sweet-Bread, Spleen, Liver; Yea, Diseases in the Mouth, Jaws or Throat, which hinder only the assumption or swallowing of the Meat, may in this respect be numbred among the causes of this Disease. As a distemper, a tumor, a nauseating, a feeble appetite of the ventricle, a distemper, a tumor an obstruction & *Skirrhus* of the *Mesentery*, & Sweet-bread, or the Liver, Spleen, and the like effects of any of the said parts, which by any means frustrate the due concoction and distribution of the nourishment, and thereupon extenuate the parts by defect of nutrition.

Of the third kind.

Diseases that induce an astonishment to the first affected parts, do also by a peculiar propriety conspire the production of this Affect. For the Natural heat of those parts is somewhat dulled by them, and is rendred less effectual : whereupon a cold distemper stealeth in by degrees, which is also (as hath been said) easily waited on with a moist distemper, a softness, and internal slipperiness. Moreover, the Puls of the Arteries reaching to those parts is secretly, and by little and little weakned, the distribution of the Blood, and the Vital Heat is diminished, the parts themselves are sparingly nourished, and at length there comes a defect of Natural Spirits, So that from this Root also, for some time persevering the

the Essence of this Disease may at last bud forth. The *Apoplexy, Palsy, Lethargy*, and the like effects do chiefly belong hither. Yet Children do exceeding rarely fall into this affect from these sleepy Causes, and so rarely, that we have not yet observed this Disease to own its beginning to such affects. If any demand a Reason of this rarity; we say, that the Bodies of Children by reason of their permeability and thinness, are seldom subjected to those affects; but if at any time they are invaded by them the Disease doth not first assault the Natural or Vital, but the Animal Constitution, and consequently procureth for the most part a deprivation of the Animal Faculty, before it interrupteth either the Natural or the Vital. But the benumbedness wherof we now speak, belongeth to the Natural Constitution, into which it cannot be presently transferred. Moreover, they are easily and speedily driven out, by reason of the facility of transpiration in the Bodies of Children, if peradventure those affects do gently invade them: but if they rage and tyrannize, they easily and speedily dispatch and kill, as being in their own Nature most terrible and grievous Diseases; and the sooner, because of the weakness of their Constitutions over whom they prevail. But which way soever they happen, they scarce continue so long, as with sufficient efficacy to imprint this benumbedness in the Natural Constitution of the parts. Yet we grant that these affects may, if perhaps, they persist longer with life, affect the Natural Constitution with that benumbedness so that this Disease may follow thereupon, although we can neither justify, nor assert it upon the credit of a single observation.

But the Diseases which do most frequently introduce an astonishment in the Natural Constitution of the first affected parts, are those very same, which hinder Chil-

Children any way from ordinary actions and due exercises, especially from the use of their feet, as the luxation fracture, or som wound of a foot, or thigh, or the leg, or the Back-bone: also tumors and pains, or the like affects, whether they afflict the parts aforesaid or others, provided that they hinder the Children, so that they cannot walk, or play standing upon their legs, or use any Masculine Exercises. For hereupon by degrees the vigor and heat of the external parts waxeth dul, which in this evil are the parts first affected, and from thence the other parts of the Essence of this affect, follow by an uninterrupted and linked succession, as whosoever will may see above.

We have now run over the Causes of this Affect, and should in the next place proceed to the differences thereof, but that two difficulties do here interpose themselves, which properly result from a higher consideration of the Causes propounded. For althoſe Causes now alleadged seem as wel common to Boys of big growth, as to Children, whereupon it may very pertinently be enquired, *How it comes to pass, that they which are grown to mans Estate are not infested with this evil, as wel as Children?* Then again, Seing that the Causes propounded are al of them almost common, both to *England* and many other Countreys, & som of them to al Climats of the Earth, It may be demanded in the second place, *why this disease is more frequent and rife in England, than in other Countreys?* These Questions we shal examine in order, and shal freely deliver our judgment concerning them.

CHAP. XVIII.

The Former Question.

¶¶¶¶¶ Hy they which are elder in years are not equal-
 ¶ W ¶ ly obnoxious to this Disease as Children? The
 ¶¶¶¶¶ terms of the Question seem to insinuate,
 ¶¶¶¶¶ that this Affect may happen, though very
 rarely to those of big age. But we reserve the solution
 of this doubt til the close of the present determination.
 Therefore in the mean time the Constitutions or dispo-
 sitions both of Children that are chiefly obnoxious to
 this Disease, and also of bigger Boyes which are rarely
 subject unto it, must be opposed and every way consid-
 ered and thought on: also of Youths, Men, and Old
 Men, and that in order and relation to this Affect. For
 the Question is not absolute, but comparative, therefore
 the first and best way of determining it, will be by a
 mutual comparison between the different dispositions of
 the said Subjects, how they admit the impressions of the
 propounded causes either with ease or difficulty. Then
 certain accidental and peculiar conditions of Yong
 Children, under such an age must be likewise considered
 in respect of which they are under one age rendred
 more, under another less obnoxious to this Disease.

That we may the more succesfully declare the former
 comparison, we will distinguish the ages of men. Here
 we comprehend Children of six months of age, a year
 old, two, three, four years old; there we understand
 those

those of five years of age or more, Youths, Men, and old men, and those we cal by the general name of Juniors, and these by the name of Seniors, unless perhaps the matter may require a subdistinction of the greater sort : these things being premised we address our selves to the collation.

First, The younger Children are of a colder temperament than the Elder. For the heat of the temperament is augmented from the time of the birth to mans estate, at which time it standeth at a stay being far more intensive than that of Children, but afterwards it declineth by degrees unto extream old age, and a little before that extream age, it falleth into the same degree as it held in the time of Child-hood ; but before the approach of this term of extream old age the temperament of aged men is more hot than that of Children, for although yong Children may enjoy a greater plenty of Natural heat, and abound with Natural Spirits, yet there is no necessity that they therfore must be of a hotter temperament, for there is required a concurrence of many things to constitute a hot temperament, beside the inherent Spirits, and the inherent heat ; as for example, a large portion of Chollerick humors, and withal or chiefly a strong endeavor of the Vital faculty, namely in the pulses, and the Vital Spirits in their circulation. Seing therfore that the yonger Children are more cold, it is no wonder, if they be more subject to cold Diseases than others, such as this is. As for old men, especially such as are inclining to extream old age, we grant that they also are more cold, and upon every light occasion obnoxious to cold Diseases. Wherefore from hence, namely, from the coldness of the temperament, we infer no difference between yonger Children & these old

old men, in respect of an aptitude to fall into this affect.

Secondly, The yonger Children are more moist than the elder ; for to wax old, if it be taken in a sound sence, is to wax dry. For although old men after their manner may be likewise obnoxious to moist affects, as Cathars, Obstructions, a *Cachexy*, a Dropsie, a Palsie, a Lethargy, a looseness and trembling of the Nervs, and the like evils, yet really there is some difference between a moist distemper which happeneth to Boys, and that which besalleth aged Persons. For in Children an adventitious humidity constituting the distemper doth not only penetrate the most retired substance of the solid parts, but they are totally incorporated with the same : But in old Men the solid parts, even then when it is endued with a moist distemper, doth not seem to part with its earthiness, but to be in some sort compounded of that Earthy Nature, and a certain adventitious crude and moist Juice, or else an excrementitious drunk into the pores, or into the substance of the parts, yet it is not sufficiently incorporated or united. For as sand, being drenched in much water, retaineth al its Earthy substance, however it be somewhat moist ; So also the Bodies of old Men, however they may be moystened with crude and excrementitious humors, yet do they not deposite that terrene substance, or that part which by the *Chymicks* is designed by the name of a dead Head, which they dayly accumulate unto themselves from their first beginning. This distemper therefore of old Persons is spurious not genuine, crude and not perfectly digested into the substance of the parts. And therefore although we grant that old men may in their way, labor with a moist distemper, yet it is manifest withal by what hath been said, how great a difference there is between this of aged persons, & that of Yong children. Moreover, that
this

this moist distemper of old men, is less Homogeneous to the present affect, then that of children, appears plainly from hence, because it produceth not that softness and tenderness of parts in old men, as we see it doth in Children, neither doth it equally dispose them to a dissipation or colliquation of the inherent Spirits, or any slippery passage either of the Blood or Exhalations, which are supposed in this Affect: But on the other side, it rather rendreth them obnoxious to obstructions, and the other evils recited before a comparison, therefore being made between the cold and moist distemper incident to Younger Children, and that which is wont to affect old men, there resulteth a pregnant reason, why aged people are not so subject to this Disease as Children.

Thirdly, Young Children, although they Naturally abound with inherent Spirits, yet by reason of the easie transpiration of their Bodies, & becaus of the laxity, tenderness and incoherence of the parts, they are much more prone then Elder persons to dissipation and colliquation of the Inherent Spirits, and by consequence upon less and slighter causes they fall into a want of them.

Fourthly, Younger Children by reason of that very same weak consistence of the parts, are also rendred more obnoxious to an astonishment than the Elder. For to the vigor and activity of the parts, there is required besides a just plenty of Spirits, a strength of their coherence and consistence.

Fifthly, it is not needful for us to ad any thing concerning the *Tone* of the parts, seeing we have so often insinuated the weakness of it in Younger Children in respect of the Elder, and any man may observe that upon the increase of years the *Tone* is more and more confirmed.

Sixthly, As for the diminute distribution of the blood

to the first affected parts, (which we have already proved to be a considerable part of the secondary Essence of this Disease) We say, that the Elder Children do use more strong and frequent exercises than the Younger, and therefore that the pulses of the outward parts are more strongly stirred up in them, and that a greater heat is raised and cherished in them, and by consequence a cold distemper is more potentially driven out of them.

Seventhly, as for the Organical faults, namely, the augmented magnitude of the Liver Head, and their Vessels, it is a known thing that the proportion of the parts is more stable and confirmed in the bigger Children, and on the contrary that in the Younger they are easily moved and altered, but the augmentation ceasing they are not any more afterwards altered, without some unusual and weighty causes. So that even in this respect the Younger Children are most subject to this Disease.

Let us therefore conclude the parts of the Question, That Young Children, in respect of their Natural Constitutions and dispositions are more obnoxious to this evil than those that are Elder, and so much the more, the Younger they are.

But we must not wave an Objection, that here we meet with, which also doth very fitly convey an occasion of passing to the other comparison; namely, of Young Children amongst themselves. For if Young Children (as is manifest by what hath been said) are more prone to this Disease by their Natural Constitution and disposition, and the Younger they are, the more subject they are: How comes it to pass, that Children rarely fall into this affect, before they are six months old and somewhat more? For according to the Opinion delivered, Children should

should seem to be principally subject to this Disease immediately after their birth, which yet experience disappointeth; yea, rather indeed it witnesseth the contrary; namely, that Children before they are nine months old are seldom or scarce ever afflicted with this Disease. Here therefore it will be needful for us to declare that other comparison of Young Children among themselves. For it cannot be, that this Affect should so constantly spare Children, chiefly disposed unto it, and frequently invade those that are less disposed, unless some difference did intervene, which did in a diverse manner relate to those ages, and which notwithstanding the propensity of Nature doth retard the invasion of the Disease, before the first twelve months were compleatly expired, and yet afterwards, either doth not at all or not so potently defend Children from this Disease. Here therefore we must find the very reason of the difference between these ages: which that we may the sooner do, it wil not perhaps be impertinent to take special notice by the way of those ages, which upon the authority of experience are observed to be more frequently affected with this Disease, and likewise those ages which are least afflicted with it.

We affirm therefore, that this Disease doth very rarely invade Children presently after their birth, or before they are six months old; (yea, perhaps before the ninth month) but after that time it beginneth by little and little daily to rage more and more to the period of eighteen months, then it attaineth its pitch and exaltation, and as it were resteth in it, till the Child be two years and six months old: So that the time of the thickest invasion is that whol year, which bears date from the eighteenth month, two years and a half being expired the Disease falleth into its declination, and seldom invadeth the Child, for the reasons already alleadged. But the reasons

reasons why Infants newly born are rarely affected, and why from the ninth to the eighteenth month they are frequently affected, and why after the first eighteen months they are most frequently affected shall now all of them in their order be produced.

The First Reasons why Children newly born are very seldom invaded with this affect may be these.

The First is, Because the *Embryon* in the Womb is by the equal heat and embracement of the Matrix strongly fortified against this Disease, as we have declared above, and by consequence the same being brought to light doth for a time retain some of that muniment & defence which it contracted from that equal warmth of the Womb, and therefore presently after the Birth it doth not so easily fall into it.

The Second is, Because the Midwives and Nurses do handle them so artificially when they are new born, that their condition is not considerably different from that which they possessed in the Womb. For they enwrap the whole Body, excepting the Head, in one continual Covering; whereupon the exterior and first affected parts of the Body in this Disease are fortified against the injuries of the outward cold, and the hot exhalations breaking out from any part of the Body are duly and equally retained by reason of that Covering which is two or three times double, and bound about with swathing Bands, and equally communicated to all the parts of the Body, so that they are cherished with an even heat as it were in a common Hypocaust or hot House. Seeing therefore that the first part of the Essence of this Disease consisteth in an unequal cold distemper, it is no wonder if these Defences and Fortifications of the Body do avert it at least for some short time.

The Third Reason may perhaps be the wholesomeness of the Diet, for Breast-Milk is the most solubrious and agreeable nourishment that tender age, especially when it is sucked from the Breasts: for it is a simple and uniform Meat, full of nourishment, easie to concoct, and friendly and familiar to the constitution of Infants. Therefore so long as they are conveniently nourished with it, they incur the fewer errors of diet, and are rendered the less obnoxious to this Disease. Yet it must be noted, that if the Nurser's milk be not laudable and good in it self, or otherwise disagreeable to the Constitution of the Infant, then this reason is of no force. Therefore if the Nurse be big with Child, or immoderately addicted to Venery, or any ways sickly, or given to drunkenness and inordinate feeding, it is safer to hasten the weaning of the Infant, unless you are provided of a better Nurse.

The fourth and last reason is the slowness of the motion of this Disease in his first invasions. For it stealtheth on so slowly, that it scarce bewrayeth any preparations to an assault til some months are expired, unless the progress of it be advanced by some extraordinary and most vehement Causes, as by some more violent Affect preceding or coming upon it. Seeing therefore that this Disease doth so slowly take Root, and seeing that Children, as we have formerly shewed, are commonly born free from it, it seldom hapneth to break out evidently into act til the sixth, yea, indeed til the ninth month. And thus we have given the reasons, why Infants newly born, notwithstanding the weakness of their Constitution, are for many months privileged from this Disease.

Secondly, The causes why Children from the ninth to the eighteenth Month are every day more frequently infested with this affect, are these,

First

First, Because the first Cause even now propounded, driving away this Disease in those that are new born, doth daily remit, and before the ninth Month doth totally vanish. Secondly, In like manner the second propulsive Cause before alledged till that age doth every day grow more effectual. For the hands of Infants, after some Months, if not before, are usually set at liberty from the prison of their Blankets, and perhaps their Feet also before they are six months old, although at night they are swaddled up again. In the day time therefore at the least these outward Members are destitute of that common and comfortable warmth. The Nurses likewise do many times over, when they cloath the weak and feeble Infants too soon. For they idly define the time of cloathing them by the number of the Months, seing that they should rather give an estimation of it by the strength and activity of the motion of their Hands and Feet. For when the motion and exercise of those parts doth avail more to excite and cherish their heat, and to irritate their Pulses, than the warmth of their swadling cloaths, without all controversie that is the time to devest Infants from their swadling cloaths. Moreover thirdly, After the ninth Month Children usually are fed with other aliment besides Breast-Milk or other Milk, and from that variety in feeding there easily resulteth some errors in point of Diet. Fourthly, The slowness of the Motion of this Disease doth not hinder, but that it may break forth into act after the ninth Month. For the motion, by reason of the unperceivable slowness of it, at the end of certain months, doth exhibit some effects and impressions. Lastly the evils of breeding teeth do likewise contribute very much to the same purpose. For the Teeth begin to breed commonly about the seventh Month, and come accompanied

with divers Symptoms, which easily dispose tender Bo-

Thirdly, The Causes why this Disease most frequently to this affect.

ly rageth when the Child is eighteen Months old, are ;

First, Because the Causes before cited hastning this Disease in the yonger Children, are upon the approach of this age taken away, or at least they operate with weak and ineffectual powers.

Secondly, The evils of breeding Teeth, although in respect of the immediate Symptoms which they produce perhaps before this time, they nourish ; yet for the most part they leave behind them in the first affected parts a certain disposition, which privily hiding it self within them, after the term of some months produceth this Disease. But the breaking out of the Dog-teeth chiefly hath reference to this place ; seing that these break out a little before the Child is a year and an half old, and their coming forth likewise is of al other the most painful.

Thirdly, Hitherto belong also those accidents which happen by reason of ablaetation or weaning of the Child, and at that time a great alteration befalleth Children in matter of Diet, which they endure not without palpable molestation. For herupon they are angry, they cry, the commotions of their minds makes them forsake the nourishment of their Bodies, they are hard to be pleased, neither do they sleep quietly. All which things do easily imprint in the parts first affected at least a foregoing disposition (although perhaps not till a long time after) to this affect.

And so at length we have also run through this second Comparison, namely of yong Children among themselves, and we have briefly explained the Causes why those

those Children at one age are more, and at another age are less exposed to this evil.

The Third part of the Question still remaineth, which as we said we would reserve to be examined at the close of this Disputation; namely, Whether those that are of a greater age do sometimes fall (though exceeding rarely into this Disease.)

We say first, For so much as concerneth that part of the Essence of this Disease, which consisteth in a moist distemper, that some difference must be expected to be between that distemper in yonger Children, and those that are bigger, in yong Men, Men, and especially in old Men, for the same difference which we put before between the moist distemper of yong Children and old Men, may according to quantity as more or less, be observed between the middle Ages, and therefore the humidity of the yonger Children will be better concocted and more genuine than that of the elder, as it is obvious to collect, *mutatis mutandis*, from the same reasoning.

Secondly, As for the organical faults, we affirm that necessarily there concurrereth a vast difference between Diseases of this kind incident to Children, and perhaps to those of greater age, for the tumors of the Bones in the Wrefts and Ankles, as also that narrowness of the Breast, likewise that disproportionatly augmented bigness of the Head and Liver, are either less conspicuous or altogether undiscernable, especially in those that are grown to full age. For as the years encrease the Figure and proportion of the Parts becomes more compact, firm, and stable; neither doth it easily come to pass that one part doth much grow out more than another by true augmentation.

Thirdly, We say that excepting the two premised

conditions, and that in that manner as they are propounded, this affect according to the other parts of the Essence thereof (although indeed very rarely and upon the highest causes only) may happen to Boys, Young Men, Men, and old Men. For first a cold distemper without al controverſie may befall them, though not ſo eaſily as Children. Secondly, A moiſt diſtemper may alſo invade them, but yet only by the limitation propounded. Thirdly, A want of inherent Spirits, may alſo befall them, but then it muſt proceed from the moſt potent cauſes. For Chronical Diſeaſes and ſuch as conſume the habit of the parts, or diſſipate it into ayr, or waſt it by long falling and an *Atrophy*, do neceſſarily leave behind them a paucity of Natural Spirits. We ſee the outward parts even in thoſe that are grown to full age, when they are extenuated and conſumed by ſuch like cauſes, to wax feeble, to languish, wither, and become deſtitute of al ſufficient Spirituality. Yet we grant that in thoſe that are grown to full age, the evil which cauſeth leanneſs being overcome, the waſted Spirits may ſoon be repaired by the vigor of the Pulſes, and that the rudiments and impreſſions of this Diſeaſe may be rooted out within one or two weeks, and by conſequence, that they are ſeldom affected with it. In the interim, if it ſhould ſo fall out, that upon that conſuming of the Inherent Spirits ſome impediment ſhould intervene that might retard their reparation, it is poſſible that this diſeaſe may grow from thence in that manner as hath been ſaid. But a numbneſs of the Inherent Spirits muſt neceſſarily follow upon a fewneſs of them. Fourthly, The parts of the Secondary Eſſence, ſeing that they have a ſtrong dependance upon the Primary faults, where theſe perſevere long (the Organical faults being excepted) they may ſupervene in their order. So that we do not doubt

doubt but this Disease may happen to any age after childhood; the restrictions which we have now propounded being granted, and upon the urgency and perseverance of great and weighty causes.

One amongst us affirmeth, that he had a Gentleman in cure about thirty yeers of age, who by dayly immoderate use of Wine and Tobacco, continued for some whole years, having neglected the due receiving of his meat, fell into such a weakness of Stomach, that continually every morning he vomited, and loathed al kind of Mear, and if at any time he swallowed any with unwillingness, he presently vomited it up again: to appease this queziness of Stomach, he was at last compelled to a continual use of ordinary *Aqua vite*, but afterwards his custome was to mingle it with stale Beer, and a quantity of Sugar; and with this drink alone he preserved himself alive for many months. In the mean time all those parts which in this Disease we cal the first affected, were extreemly lean, and became soft, loose, languid and withered, so that he could neither turn himself in his bed, nor rise, nor walk, nor stand upright, yet he felt no pain, neither was there any privation of sens and motion, no cough, no uneasy respiration, his face was well colored, and al the parts about his Head were in a good condition, and wel habited, so that had you judged of him by his countenance only, you could scarce have suspected that he was sick. As he lay in his bed he would chat with his Companions, take Tobacco by turns, and drink that mixture of Beer and *Aqua vite* aforesaid. The event of the Disease doth not indeed belong to this place, yet we shal set it down to gratify them who are desirous to know it. The Physitian being sent for, he strictly forbad al intemperance, and amongst other remedies having given him one grain & a half of *Laudanum Londinense*.

dinensis, he appeased the nauseous infirmity, and tumult of his Stomach, which part he likewise strengthened with internal and external applications, and prescribed him such a diet as was most easy of concoction. Instead of exercise he solicited the heat unto the outward parts with rubbing them every morning: having first given a smal quantity of strengthening and opening Electuary, made up with a little portion of Steel, which he drank in two ounces of Wine, composed of Wormwood and Mint, a little Saffron being hung in it, to give it a tincture; three ounces of smal Beer, being tempered with it, and a quantity of Sugar to make the taste of it more pleasant. Moreover, he purged him by fits with gentle Medicines, and in the evening comforted him with cordials. Within twenty days he grew to such a degree of amendment, that he could walk abroad, for the space of an hour, and could without any striving or much weariness climb ladders without any help. But afterwards by a relaps into the like intemperance, he died in the absence of his Physitian. But let us return from this digression into the way, & direct our speech to our intended scope. The Affect being now confirmed, as it was upon the first coming of the Doctor; Besides the faults of the Stomach, it seemed to include a great part of the Essence of this Disease, we now treat of. For in the parts subservient to motion; namely, those that are first affected in this Disease, there was a cold distemper, either through defect of motion, or by reason of the immunitie afflux and dispensation of the Vital Blood. Again, the softness, slipperiness, laxity, and litherness of those parts shewed that there was a moist distemper in them. Also the extream leanness of those parts did sufficiently demonstrate a fewness of inherent Spirits, and the unsuitness to motion, and affectation of rest and ease did strongly

gly witness a numbness in those parts. The full and flourishing habit of the parts about the Head, when the other parts were extenuated, was a forcible reason to prove the unequal distribution of the Blood. But the peculiar cause of this inequality in this sick man, might be his frequent vomiting, whereby a more plentiful afflux of the Blood was driven to the parts about the Head the other being almost destitute of it.

Any man may perceive by what hath been said, that at least the greatest part of the Essence of this Disease was comprehended in this mentioned Affect. From whence at length we may probably infer, that it is possible for this Disease to happen to those of full growth, being considered according to the propounded limitations; although it very seldom comes to pass, because great causes and length of time are required to the production of it. And thus at last we have put an end to the search upon the former Question.



CHAP.





CHAP. XIX.

The latter Question.

Why this Disease happeneth more frequently in England; then in other Countreys? And whether it be Natural to Englishmen?

It is acknowledged by the common consent of Physicians that there are certain *Country Diseases*; namely, which more frequently infect the Inhabitants of some one Region, than of another, by reason of som Common Caus. But seeing the relation of the Country to the Diseases usually raging in it, may be observed to be of a divers kind; and seeing wise men have improperly denominated some Diseases from certain Countreys: Finally, seeing that they who have hitherto written of Countrey Diseases have without difference, called all Diseases which are most rife in any Region by the name of *National* or *Countrey Diseases* as if they did equally participate of the Nature of a Countrey Disease; we have judg'd it to be a profitable enterprize to premise some things in this present disquisition, concerning the differences of these Diseases among themselves.

First, Therefore those affects which have the denomination of Country Diseases, from the Region, are properly, or less properly, and abusively so called.

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There are four conditions required to denominate a Country Disease properly so called.

The first condition is, *That the Disease be more frequent in that Region, unto which it is attributed, as Natural and common, then in any other Region, unto which it is not attributed as such.* For a common or Country Disease, is always supposed to have an unequal reference to divers Regions, and to infest one more (namely, that unto which it is ascribed) and another less.

The Second Condition is, *That the Disease depends upon some kind of inclemency of the place.* For a Disease properly common imputeth a certain crime or faultiness to the very place; therefore when a place is not guilty of some peculiar fault, such an imputation is improperly, falsely and unjustly ascribed unto it.

The Third Condition is, *That the inclemency and sharpness of the Region be so great, as to affect the more wary, and such as observe a due Regiment of health, and such an one as is appropriated to the place.* For in the Regiment of health some peculiar Caution is due to certain Countries. Therefore when a People neglecting such a peculiar Observation of the place, shall fall into some Epidemical Disease by an erroneous use of the non-natural things, that it is not to be reputed a common disease, but to be imputed to the error, want of wit, incogitancy and negligence of the Inhabitants. For this disease, which we suppose might have been prevented, had the Regiment of health appropriated to the place been rightly observed.

The Fourth Condition is, *That that vicious constitution of the Country do either continue long, or return often.* For the fault of a place that is fugitive, not permanent nor often returning, must be accounted as somewhat foreign and meerly accidental in respect of the

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Region, and cannot properly denominate a common Disease. As for example, If a pernicious and unusual Air should chance to be blown hither from other countries, and should produce a common disease, which should not prevail beyond some months; that disease ought not properly to be called common, but rather casual and chanceable. Wherefore the Feaver of *Hungary*, and the Sweating-sickness of *England*, although they obtained their Names chiefly from those Regions, yet are they abusively termed common, because they want a durable fomentation from those places, and because they either cease altogether, or at least are not for the present more predominant in this or that place than in another.

Diseases improperly common do indeed include the first propounded condition of such as are properly so called, namely, because they more frequently occur in that Region whereunto they are attributed, then in another, (for otherwise they would not deserve the appellation of Diseases improperly common) yet they want the second third, and fourth. For they either lack that fomentation that is rooted in the Region, or that fomentation which they have is very weak and inconsiderable, which also may be overcome by a Regiment of diet appropriated to the place; or finally the fomentation is not permanent nor durable, nor frequently returning. Now by fomentation we understand somewhat that is faulty in respect of health, founded likewise in the condition of the Country. Therefore when some common and frequent Disease ariseth from the abuse of some commodity of the Region, as if some Nation by reason of the great plenty of fruit, and the like fruitfulness of the place, or by reason of a long and secure peace should abuse themselves to intemperance, sloath or the like vices and thereby incur some common Disease, that Disease is not properly to be called

called common. For the occasion of that Disease, which the Country did supply with, was laudable in it self, and therefore what event soever succeeded, the abuse thereof ought to be imputed to the error of the inhabitants, not to any unkindness or discourtesie of the Region. In like manner if the fomentation of a Disease be culpable, yet shall not that be founded in the very constitution of the Country, but in some action of men, as when after the desolations of War the unburied Carcasses pollute the Air with their putrification, and therupon introduce an Epidemical Disease, this ought not to be called a common or Country Disease, because it dependeth upon the liberty of mans will, and was not procured by any proper fault of the place.

Sometimes also a Disease is ascribed to a Nation or Place by calumny, and abusively through the malevolent and corrupt intentions of some People to traduce the Fame of their neighbor Nations. After this manner the *Neopolitans* call the *Venerous Evil*, the *French Pox*, as if it were Natural and Common to the *French*. And on the contrary, the *French* to requite the Slander, term it the *Neopolitan Scab*. But of this enough.

A Disease properly called Common, is either Original and Ancient, or Adventitious and New. The Original is that which from the first Inhabitation of the place hath infested the Inhabitants: of this kind perhaps is the Disease in the Throat called *Branchocela* among those that dwell about the *Alps*; that burning Feaver which they call a *Calenture*, under the torrid Zone: the mortification of the parts under the cold Zones towards the Poles by extremity of cold.

A Country Disease that is new and adventitious, is that which is brought into a Country by some common Cause. This is threefold, for either it proceedeth from
some

some Original fault of the Region, prevailing by the advantage of time against the health of the inhabitants, or from some alteration or innovation hapning to the Region it self. Or from some incongruity between the Place and the complexion of the Natives.

First, A new common Disease invadeth a Country by some Original fault in process of time prevailing more and more. For 'tis possible, that the firm and strong Bodies of the first Inhabitants of any place may powerfully resist the unwholsom influence of the Region, and for many Ages may repel the invasion of the evil, although their posterity afterwards, in length of time, being by degrees changed in that peculiar Reason of the complexion wherby they maintained the former resistance, may fall at last into some common Disease. For the *Plica* of *Poland*, and the *Scurvy*, are common Diseases to the *Sarmatians*, *Polanders*, and the Inhabitants of the *Baltick* Ocean, and they are likewise new Diseases, and (as all men confess) totally unknown to the Ancients. But to this day it is not known that any notable or remarkable Change or Innovation hath hapned to those Regions before the breaking out of those Diseases, to which you might probably ascribe the beginning of a new Disease. Wherefore we ought rather to say that those new Diseases did proceed from some ancient and original fault of the places: and yet that they did not bewray themselves at first by reason of a peculiar resistance made by the Natural strength of the Inhabitants. For to this very day some Families in those places are free from those Diseases, and very credible it is that they may so persevere, not yielding to the injuries or threatnings of the Region.

Secondly, A new common Disease may result from the altered or innovated constitution of the place. Such kind

kind of innovations happen in Countries, either by Earthquakes, or Inundations of Water, or the bursting forth of some new pernicious Springs, or perhaps of some new Mineral Exhalations from the Caveous of the Earth, or from some malignant Aspect of the Stars and the like Causes.

Thirdly, A new common Disease may proceed from the incongruity of the Place with the complexion of the Natives. Such kind of Diseases chiefly happen to Nations, when they transplant themselves from one Region to another : especially when the Constitutions of those Countries which they go to possess, are very different from those they forlook. So the English who first inhabited *Virginia* were frequently afflicted with a swelling of the *Abdomen*, and the *Hypochondriacal* parts ; who upon their return to *England* were cured without any difficulty, but they who continued in *Virginia* were not so easily restored to health.

Moreover, National and common Diseases differ among themselves. Because some of them totally depend upon the inclemency of the Region, and others in part only. The mortification of the parts seemeth to be of the first kind which befalleth men in the Northern Tracts near the Poles. For the whole Essence of the Disease may be ascribed to the cold and sharpness of the Place. Of the second kind the *Venerous Pox* among the *West-Indians* seemeth to be. For there it is conceived to be partly gotten by impure Copulation, and partly to be contracted from the Insalubrity of the place. In like manner the Bloody Flux is predominant in *Ireland*, depending partly upon the constitution of the place, partly upon an erroneous and preposterous diet. And thus much in general be spoken of the differences of common Diseases. In the next place we must enquire

enquire why this Disease is more rife in *England* than in other Regions? And by the way it must be observed, *whether, and how far forth this Disease may be said to be Natural to English men?*

First, it must be observed, that *England* is an Island which borroweth some humidity from the adjacency of the Sea, and some frigidity from the distance from the *Equator*, then that it aboundeth with innumerable fountains, discovering their Springs almost in all places. Lastly, That it is watered with many and frequent showers of rain more than other Regions. All which things do sufficiently attest the frigidity and humidity of the place. Seing therefore that a cold and moist distemper is a part of the Essence of this Disease, we may easily infer that the bodies of the Inhabitants are here more inclined to those distempers then in other hot and dry Countries.

If therefore you demand, *whether this Disease, at least considered in this part of it, may rightly be said to be natural to English men?*

We answer, That in some sort it may (although perhaps not properly) namely, so far forth as the same is attributed as natural to other Regions, alike cold and moist (although perhaps it may not yet be observed in them.) For those Countries are as readily disposed to imprint a cold and moist distemper as *England* it self. Yet it must be observed, that a cold and moist distemper is a common part of the Essence of this Disease, and that it alone doth not manifest the Affect, for every cold and moist distemper doth not introduce this evil. Wherefore although we grant, that an excess of cold and moisture may be imputed as a fault to *England*, yet we deny that from thence it can be rightly inferred that the whole Disease is common and Natural to English men.

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Moreover, Some Countries may perhaps be found out far exceeding *England* both in cold and moisture, as *Scotland, Holland, Zealand, Ireland, and Denmark*, and the like ; wherein notwithstanding this Disease hath not been observed to appear much. Therefore if this Disease be not rightly imputed to these Regions, wherein that common cause is predominant ; namely , the excess of cold and moisture. Certainly neither can it justly be imputed to *England*, by reason of that common Cause, which is here less prevalent. Again, The coldness and moistness of this Kingdom doth not so far transcend a mediocrity, but that by outward and inward applications, exercises and the like ; namely, a right use of the six things not Natural, they may be sufficiently corrected to the cashiering of that imputation, Wherefore if these things be so, namely, if a cold and moist distemper be only a common cause of the Disease, if other Regions wherein this Affect hath not yet been observed to make any impression, are at least equally obnoxious to cold and moisture : Finally, if those distempers may be prevented by a Regiment of diet appropriated to the place ; certainly the reason drawn from the coldness and moisture of the Climate, which even now we produced to shew why English men should be more frequently invaded with this Disease then others, will be very weak and insufficient, so that we can by no means place our content in that alone, and therefore we intended nothing more by that assignation, than that *England* doth more dispose the Bodies of the Inhabitants to this Affect than hotter and drier Regions do the Bodies of their Inhabitants. And so we proceed to the search of the other causes of the risens and frequency of this Affect.

In the second place we can note that *England* is very fruitful

fruitful and Child-breeding being sufficiently favorable both to Conception and Child-bearing, and not subject to cause abortions. Now from hence it comes to pass, that not only strong and able bodied men, and such as are endued with perfect health, but the weak and sickly persons do also generate; weak & unsound women likewise, and such as are prone to a consumption, do conceive, carry their children nine months, and bring them forth in a decent and laudable manner. But it is no wonder if the Issue begotten by such matter, and which oweth its life almost to the clemency of the place alone, should be feeble and languid, and very subject to this Disease. For as much as the very benignity of the Region may in this respect be the occasion of some infirmity in the Issue. For as barbarous People in time past by an inhumane experiment upon their new born infants; namely, by dipping their naked bodies in the coldest water, destroyed the weak ones with the extremity of the cold; and gave education only to the strong ones, whose vigorous Constitutions overcame the injury of their cruel policies, purposing by that inhumanity to have an universal race of strong & lusty people. So on the contrary the very clemency of the place promiscuously preserving the languishing and weak Children together with the strong & healthful, doth minister an occasion of bringing forth a mixt kind of people some strong and some weak and sickly. Yet least any should mistake, we do not mean that all the Children in this Kingdom which are born of weak and sickly Parents are subject to this Affect. For although if one or both of the Parents be infirm, the Children will be infirm; yet it is often seen that when the Parents have been very strong and healthful, yet their Children have been very subject to this Disease. Wherefore neither do we rest in this second cause, but another

another must yet be enquired out, from whence we may derive a sufficient reason of the frequency of this evil.

We affirm therfore in the third place, That the riseness of this Diseaf in *England* hath been much promoted, by that long and secure peace, which we enjoyed before the first breaking of it. For by this the more wealthy families, which were first invaded by this evil, and which doth stil infest them more than others, had addicted themselves to idleness and a loose and effeminate life, and therupon they fel into a moister, softer, and degenerate Constitution, and such as was less purged and cleansed from excrementitious humors, and by consequence their Children were even procreated obnoxious to this Affliction.

We answer, True it is that *Scotland* and the Northern parts of *England* are less affected with this Diseaf than the Southern and the Western. In the mean time peradventure the first impressions and rudiments of it are far more frequent in those places; yea, and in some foreign Countries, then is commonly beleeved. For although this evil be very familiar in the South and West parts of this Kingdom, and very wel known among the Vulgar sort, yet we have many times seen Children afflicted with it in a slight manner, of whom neither the Parents nor others of the same family did suspect the least evil: Yea, we have known many, whom none of their friends thought to be affected, to be healed without any help of Physick by the sole benefit of the increased heat, or by the increase of age or exercises. How much easier therfore may the first rudiments of this Diseaf be

concealed from them, to whom it is less familiar ; and among whom it seldom ascendeth to that degree, that they need to implore the Physitians help. We conjecture therefore that this Disease is more frequent then is commonly beleeved both in *Scotland* and the Northern parts of *England* ; yea, and in some Countries wherein the people are ignorant of it to this day: but in those places they are so gently tormented with it, that they are seldom condemned to the hands of the Physitian. For that is the custome of the Vulgar sort, not to send for the Doctor (especially to Infants and yong Children) unless the vehemency of the Disease constrain them. However the matter is, we seem not yet to have given satisfaction to the objection propounded, *why the South and west Country men of England are more grievously & frequently afflicted with this Disease, then the Northern People and the Scots, although both Kingdoms equally shared the blessing of the lasting peace and security.* Therefore we grant that a higher reason yet must be given for this difference. Fourthly, therefore and lastly, we say, That the cause of this difference is the affluence of all good things in these Southern and Western Countries of *England*. For this part of the Kingdom is much the more fruitful, rich and flourishing, and abounding with all manner of allurements to pleasure. Therefore it is no marvail if the customs of men do first generate here, their Spirits decay, and the strength of their Bodies begin to dissolve now, that this degenerate and delicate manner of living doth weaken families, is a truth so solidly and constantly attested by Historians, that it were an impertinence to offer any proof of it. For you may observe that the most Noble and Gallant Families have been very much reproached for these very causes ; yea, and sooner or latter sometimes totally extinguished, and so much the sooner as they have the more refused to undergo

dergo labors, and to innure themselves to masculine exercises. Neither are families ever plunged in a greater danger of degeneration, then when they abound with all good things, and lying open to plenty and security they are most powerfully invited to delicateness, idleness and effeminateness, without any labor, care, and solicitude. Who was more rich, secure, and effeminate, than Solomon? He left *Rehoboam* a degenerate Son behind him. And perhaps the family of *Henry* the 8th. is extinct for the like cause. We could heap up almost innumerable examples to prove this, if it were needful. However it be, we see plainly, that this Disease doth more frequently and vehemently invade the families of the wealthy, than the cottages of poor men, and therefore it ought not to seem strange that it likewise infested the richer and more pleasanter parts of the Kingdom; namely, the South and West, before the North parts. But these things shall suffice to have been spoken concerning this matter. It remaineth only that we enquire, *whether and how far the three last assigned causes relate to the denomination of a Common Disease, and whether in respect of them, this Disease may be ascribed to England as common and Natural?*

You must know then that these three causes in as much as they depend upon the Region, are not properly causes, neither by their own nature do they produce this affect, but that they are only an occasion wherby this Disease may accidentally arise. For in themselves they denote the laudable conditions of a Country, at least they infer not what is culpable in it. For who can accuse his Country, because it favoereth the procreation of Children, much less make outcries against it, because it enjoyed long and secure peace. Finally least of all calumniate the pleasantness, fruitfulness, and affluence of all

good things : For all these things are in themselves blessings, and conditions to be wished for in a Country. Seeing therefore as we have shewed above, that a Disease properly common doth imprint som mark of a vitious Constitution to the place to which it is ascribed ; It is impossible that any Disease can be attributed unto it as properly Common, by reason of the commodity of the Region. Wherefore (that we may comprehend all in a word) although this Disease in respect of the coldness and moistness thereof have a fomentation, in the very Constitution of the Country . Although also that it borrow three other occasions of invading from the Country ; Yet seeing that those distempers may be prevented by a due observation of the Regiment of Health appropriated to the place ; and seeing that the three other occasional causes, are not properly blamable, but desirable, we must affirm that this Disease is not properly Common to *England*. And so we have put an end to the search of the causes of this Disease.



C H A P.





CHAP. XX.

The differences of the Disease, called the Rachites.

Here are many differences of the *Rachites* in regard of the concurrence of several evils, and more than any man would easily imagine; some wherof are of great importance, and others less considerable we have resolved here briefly to propound the chiefest. For the knowledg of them is not only profitable to define the *prognostical* causes, wherby the various events of a Disease are distinctly fortold according to those differences; but it also much conduceth both to the prevention and the cure of a Disease; namely, that by a consideration of them apt and fit remedies may be chosen.

Now these differences arise either from the Essence of the Disease, or from the causes thereof: or lastly, from Diseases conjoynd with it. The Essence of a Disease may vary many ways: First, By reason of the parts of the Secondary Essence either present or absent. Secondly, In regard of the magnitude of it. Thirdly, In respect of the vehemence. Fourthly, in regard of the Spirits; And fifthly in respect of the times.

We grant indeed, That there is a certain agreement between som differences comprehended under these titles; yet seeing that the formal conceptions of them are distinct, it must be confessed that they deserve distinct

considerations. For although a Disease, even in that very respect may be called greater, because it containeth many parts of the Secondary Essence in the same Patient yet this is a different & distinct consideration from that of the magnitude of that Affect. For the magnitude properly hath respect unto the degree of recess from the Natural State, and not to the Nature of the part of the Essence either present or absent, for hereupon resulteth more then a gradual difference. In like manner some of the other differences do perhaps signify the same thing, in a concrete and restrained acception, which notwithstanding in an abstracted and formal consideration denote a diversity. But let us proceed.

The first difference of this Disease is that which ariseth from the presence of few or many of the parts of the Secondary Essence therof. For although all the parts of the Primary Essence are perpetually present with the Disease it self, yet there is no necessity that all the parts of the Secondary Essence should be always present. For these are after-comers to the first Essence, and do by degrees come upon it : Yea, some of them may be so highly intercepted by the intervention of resisting causes that they may not at all appear. Hither you may refer that difference, which we propounded at the foot of the precedent disputation, and which we shewed might possibly, though indeed very rarely, befall those that were grown to full age. But because our purpose here is only to handle the Disease as it is incident to Children, we shall be content to pass by that difference thus noted by the way. But even in Children themselves there sometimes happen some parts of the Secondary Essence, which have a most strict conjunction with the Primary Essence, at least they succeed them in the order of Nature. For the Primary Essence hath the efficacy of a cause, which in
Nature

Nature doth ever go before the effect. But in order of time some parts of the Secondary Essence do conspire as it were, and concur with the Primary Essence in the invasion ; and others again do come afterwards, these we must here distinguish. For the former sort are absolutely inseparable, the latter sort separable from this Affect.

The inseparable parts of the Secondary Essence may be reduced to these Heads. First to the afflicted *Tone* of the first affected parts. Secondly, to the unequal and imperfect distribution of the Vital Blood. Thirdly, to the too small participation of the Vital influx in the first affected parts. Fourthly, to the Secondary faults of the Animal Constitution. These faults are sufficiently unfolded above in our discourse of the Secondary Essence of this Disease ; where likewise because of their strict carriage with the Primary Essence, any man may perceive with eas (though they have a casual dependance upon the Primary Essence) that they begin together at the same time.

But all the Organical faults which we have also already recited, are found to be separable, and sometimes actually separate from this Disease. For the magnitude of the Head, and the leanness of the Joynts, the crookedness of the Shank-bone, or the Elbow, the inflexions of the Joynts, the sharpness of the Breast, do not necessarily accompany this Disease presently from the beginning, but in process of time they bewray themselves by degrees and supervene upon the Affect. And although the Consumption of the parts, which in some sort hath an influence into the said faults, may be said to be present in some slight degree from the begining of the Disease, yet is it indeed only a Symptom, and not a Disease ; neither is it able presently to produce those Diseases of magnitude,

rude, Figure and Place. Moreover it is not necessary, that these Organical faults should equally and at the same time invade one that hath the *Rachites*, we grant indeed that the extenuation of the first affected parts, when the Disease is of some continuance, doth alwaies and necessarily succeed it, neither can it afterwards upon the perseverance of the Disease be removed, that it is likewise a principal part of the separable parts of the secondary Essence; yea that the extenuation whilst it is making doth immediatly follow the smalness of nourishment of the first affected parts, almost no otherwise than the smalness of nourishment immediatly followeth the primary Essence of the Disease in the said parts; but withal we affirm that the extenuation being made which is it self a secondary part of the Disease wherof we discourse, doth necessarily presuppose the motion and time of the Disease, and that it cannot be in the first moment of the existence of the Disease. We say moreover that Physitians do not acknowledg any change made in the parts exposed to the sens, which doth not yet appear to the sense, and by consequence they affirm that extenuation befalleth the first affected parts, til it be made obvious to the senses which certainly doth necessarily require some duration of the Disease. But the improporcionat magnitude of the Head, doth begin almost at the same time with that extenuation of the first affected parts, but it may so fall out, if a consuming Phthisick be joyned together with this Disease, that that magnitude of the Head may vanish before death, as we have already proved by one example in our *Anatomical Observations*. The Magnitude of the Head therefore is more separable from this affect than the extenuation of the first affected parts, for this cannot be removed without the Disease be cured. The sticking out of the Bones appear

appear sometimes sooner, sometimes later, and they sometimes grow out more, sometimes less, but upon any long continuance of the Disease they are seldom (if ever) seen to be absent. The narrowness of the Breast doth not appear, but after a long time when the Disease is confirmed, and for the most part is the forerunner of a Ptytick. Again, the crookedness of the Bone in the Arm, and the Shank-bone, as also the inflexion of the Joynts may be absent through the whole course of the Disease, and may be more or less present, and indeed is the most chanceable among those things which follow this affect. We conclude therefore that these Organical parts of the Secondary Essence are separable after that manner as we have said, and as a more or fewer of them are present, so the Difference of the Disease is constituted, as being more or less compounded.

The Second Difference of this Disease resulteth from the magnitude thereof. And the magnitude is estimated from the greater or lesser recess from the natural condition of it. There is a vast difference in this Disease in respect of the magnitude. For some are so gently affected with it that you would scarce suppose them to be sick. They complain of nothing, they eat, they drink, they sleep like those that are sound in health; only they play with more uncheerfulness, and shew forth some other very slight signs of sickness, By the only benefit of Nature likewise without any assistances of Art they perfectly recover, neither their Parents, Nurses, nor the By-standers so much as once suspecting that they are affected with this evil. On the contrary, Others are so vehemently afflicted that they cannot be rescued from death or the danger of imminent death by the most approved remedies.

The Third Difference is from the vehemence of the
the

affect. Now this is valued by the violent motion of the Disease and the resistance of Nature, and also by the sharpness of the conflict of these things among themselves. This Disease, although it be otherwise very great, yet is it slow in motion unless some fever, or some other urgent affect be conjoyned with it, and stir up the Nature of it to a fiercer opposition, yet is the motion thereof sometimes more vehement, and sometimes very dull, and thereupon it happeneth to be differenced.

The Fourth Difference, is from the strength of the sick Child or Infant. This is estimated by the greater or lesser presence of those things which are according to Nature. Hither belongeth the condition of the temperament, the plenty of inherent Spirits, the activity and strength of the *Tone*, the vigor of the Vital and Animal Constitution, and the structure of the Organs. For as these are more or less obedient to the prescriptions of Nature, so their Spirits ought to be judged more or less strong, and according to them the evil must be determined the more or less dangerous. For this cause the younger Children *cæteris paribus* are more dangerously affected than the elder.

The Fifth Difference, is from the times of the Disease. And this difference in a qualified and limited acceptance includeth almost all the precedent; for what difference soever hapneth to any Disease, must necessarily happen at some time of the Disease. Physicians reckon up four times of a Disease: The Beginning, the Augmentation, the Consistence, and the Declination. But it must be noted that Physicians are not so exact in distinguishing the seasons of things as the Philosophers, for they do not restrain the beginning of a Disease to that point of time wherein the Disease beginneth; but so far they extend it, till there appear so great an alteration of

of the Disease, that it may be known by certain and sensible evidences. For the indivisible beginning is not the time, wherein the Physitians help is perfected, and why should that distinction of a Disease be profitable which could not be grounded upon any alteration of it known to us?

Galen therefore hath rightly deduced the times of Feavers and Inflammations from the understandable alteration of them: that is, The beginning from the crudity of the matter causing the disease, the augmentation from the manifest coction therof; the state from the Excretion, and the Declination he computes from the Reduction of the Reliques to the Natural state; and indeed these times do sweetly agree in the general, and differ in particular from the crudity and coction of Feavers and Inflammations. But the truth is, That this distinction of times hath not the like success in many other diseases: For in these Nature doth not so regularly proceed from crudity to coction, so to expulsion, and at last to reduction; neither by these can we truly and safely know the progress of the disease. Other alterations therefore of these Diseases, such as are more clear and easily known must be weighed. Yet we grant that even these diseases when they are directed to health, do run thorow those four seasons, the beginning, the augmentation, the state or consistence, and the declination. But when they tend to the destruction of the Patient, they scarce attain to the consistence, but are daily more and more augmented even to the last period of life. Wherefore in these the augmentation admitteth the greatest latitude, neither doth it deserve a higher difference, or a lower subdivision: but when an indifferent state of a disease of the same kind is made the Middle term between the beginning and the end of such an augmentation, than we can conveniently

ly distinguish. The encreas into an augmentation on this side, or beyond, or beneath, or above the consistence. An encreas of the first kind about the consistence we may call a *simple encreas*, in regard that it differeth not from the thing it self commonly received by that name, an encreas beyond or above the state, we call an encreas *excrecent, excessive, transcendent and desperate*.

Moreover, Two kinds of declination may be observed in a Disease. The first is legitimate when the Disease simply declineth towards health and recovery. The later is spurious, when a disease remitting changeth into another of a different kind. And so although there are in thos that recover health, only four times of a disease, yet in others two more differences may be discerned: Yet it must be noted, that thes six times are never to be found in the same disease, or the same patient, but where there is the same disease in the Species in divers subjects. Let us now apply these things to the present affect. We affirm therefore that six differences of this disease do occur in respect of the times therof. For it hath a beginning, and may be called *incipient*: it hath an encreas, and may be said to be *confirmed*; it hath a state, and then it it may be termed *consistent*; it hath an encrease beyond the state, and may be called *desperate*: it hath a true declination, and may be said to be an affect remitting or simply declining; and it hath a spurious declination, and may be called a change, as when it changeth into some other disease. Of al which we wil speak in their order.

First, The *Rachises* is called a Disease beginning, when the first Rudiments and impressions thereof are, though very obscurely, first observed, and before there hapneth any manifest extenuation of the first affected parts.

Secondly, This disease is said to be confirmed, when an evident and manifest extenuation of the first affected parts

parts becoms' obvious to the Senses. And here the *Reader* perceiveth we do not distinguish theſe two times from crudity and coction, but from another alteration of the Body, namly, The Extenuation made in the parts firſt affected; for the beginning of this diſeaſe can no ways be diſcerned from the encreaſe thereof by crudity and coction: But otherwiſe, ſo far as the nature of the thing is capable of it, we ſhall willingly follow the example of *Galen*, and as he diſtinguiſheth the encreaſe from the beginning by the manifeſt coction, ſo we alſo put a difference between theſe times in this affect from a manifeſt alteration, namly, the extenuation made in the ſaid parts.

Thirdly, This diſeaſe advanced to its conſiſtence, is that, which having attained the higheſt vigor and exaltation, is arreſted, and for a time is neither ſenſibly encreaſed, or leſſened, but continueth at a ſtand.

Fourthly, This diſeaſe exceeding the Mediocrity of the conſiſtence is called desperat, namly, Becauſe in magnitude and vehemence it ſurpaſſeth the very ſtate of the ſame diſeaſe in another Patient indifferently affected, and withal is continually encreaſed, neither is there any hope but that it will daily encreaſe til it hath altogether ſubdued and diſſolved the Patient For which cauſe this condition of a diſeaſe is termed desperat.

Fifthly, This diſeaſe is ſaid to be truly remitting or declining, when the Eſſence thereof is by little and little diminished, and when the Signs and Symptoms of it are daily mitigated.

Sixthly, This diſeaſe is ſaid to be illegitimately declining, or paſſing into another diſeaſe of a diverſe ſpecies, when the Eſſence, Signs and Symptoms thereof are ſo leſſened, that new ones of a different kind, and perhaps more outrageous appear in their ſtead. Thus the *Rachites* frequently degenerat into a Conſumption, a He-
ctick,

Stick, and sometimes perhaps into a slow putrid Feaver; yet for the most part the same disease doth accompany the supervening affects to the dissolution of the Patient. And let this suffice concerning the differences of this disease deduced from the Essence.

This disease in like manner in respect of the Causes is as it were taken into pieces, or divided into parts, namely into a natural affect, and into an after-coming or newly contracted malady. Again, This disease may be termed natural in a twofold sense: In the first properly, As when the Sick is born actually affected with this disease. In the later improperly, when the Patient at his birth is not actually affected with it, but strongly disposed by his native principles to fall into it. If it please the Reader to summon those things to his memory which were said above concerning the causes of this Effect on the Parents parts, he will easily conceive the reason and foundations of this difference, and consequently that will excuse us from any further explication: Only we add, that this difference is of great use in the judicial part of cure, which consisteth in applications antidotal and preventive, but it is not of so great moment in the Method of Cure. In like manner this Affect is merely coming after, when being fomented by no Natural disposition, it is newly contracted after the birth: & here also it is twofold. For it either succeedeth some foregoing Disease; or it is immediately produced by an erroneous use of the six non-Natural things: We have sufficiently discoursed of both, where we hammered out the causes of this Disease after the birth, and thither we direct the Reader.

Again, this Disease admitteth some differences by reason of other Diseases wherewith it is conjoynd in the same subject. It must not be expected that we should give in a Catalogue of all Diseases, wherewith this Affect

fect may possibly be conjoyned, we shal only reckon up those which are the usual Companions of this Malady. Som wherof have a certain dependance upon this Disease and the causes of it ; others have not any, or at least not any worthy of a distinct consideration.

Of the former kind are a *Hydrocephalus*, the faults of breeding Teeth, an *Asthma*, the *Ptytick*, an *Heetick* fever, a slow, and erratical Fever, and the *Ascites*, which is that kind of Dropsy when water hath gotten between the flesh and the Skin.

The *Hydrocephalus* hath a great correspondence with this Affect, seing that this Affect also doth for the most part suppose an increas of the Head preternaturally encreased, and an overplentiful afflux of the Blood unto the Brain by reason of the largeness of the Arteries thither extended. And hereupon it easily coms to pass that the Brain being oppressed wth the abundance of the Blood, must somtimes needs suffer the more serous portion therof (as being the most permeable) to evaporate or sweat out into the Ventricles and cavities within the *Meninges*, and by consequence to produce the Dropsy of the Brain. But this, as we have already noted, doth always appear.

The faults of breeding of Teeth also are somtimes justly ascribed to this Disease going before. For it is well known that they who are affected with this Disease do commonly breed Teeth with extreame pain, and many times the Teeth themselves fall out by pieces. But we have above reduced this fault to the unequal nourishment of the parts, and there the Reader may find further satisfaction. In the mean time it must be observed, that a painful breeding of Teeth may likewise precede this Disease, and sustain the force of a cause in reference to this subsequent evil, as we have likewise shewed above.

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Moreover, An *Asthma* or difficulty of breathing doth familiarly follow upon this Affect, because the Blood is somewhat cooled in his circulation thorow the first affected parts, and is rendred more thick, viscous, and sluggish in motion, neither is it always perfectly corrected before its return to the right Ventricle of the Heart. Whereupon being unapt for passage, it is powred back from the right Ventricle thorow the Arterious Vein into the substance of the Lungs, and for that Reason doth easily introduce obstructions, hard tumors, difficulty of breathing, sometimes inflammations, impostumes, Ulcers, the Ptyick, the Dropsy of the Lungs, a Hectick Fever, or els a slow erratical Fever.

An *Ascites* is also sometimes consociated with this Affect. But whether it proceeds from a copious flowing of the Blood to the Bowels of the *Abdomen*, we dare not yet attest for an undoubted truth. Yet certain' it is that the flowing of the Blood to this Belly is very copious and sufficiently active in this Diseas. For the Liver is great, and the other Bowels are observed to be rather more full than ordinary, than pined away. Whereupon it may happen, that that watry moisture from the Bowels which are oppressed with a fulness may be carried into the hollownes of the *Abdomen*, but we affirm this with a distrustful confidence, because we have not yet given our selvs full satisfaction in this matter.

Nevertheless these recited Diseases may happen to Children although the *Rachites* have not preceded, and may be the caus to introduce it: Yea, they may likewise com upon this Diseas from other causes; as for example, by som errors in the Regiment of health; although in this case also this Affect may be partly guilty, if it went before: And thus much of complicated Diseases of the former kind.

But

But of the latter kind, namely, such as have little or no dependance upon this Affect, are a *malignant Feaver*, the *French Pox*, the *Scurvy*, and the *Strumaticall Affect*.

First it is certain, That a *Malignant Feaver* may come upon this Affect, because for the most part it is produced by infection, from which this present Affect leaveth not Children free, we ad only, that this Feaver doth seldom or never ow his Origin to this Disease.

Secondly, If the *French Pox* chance to be complicated with this Disease, it is either derived from the Nurses infection, or from the Parents by Inheritance. For it is a Disease altogether Distinct from this, and hath scarce any affinity with it.

Thirdly, The *Scurvy* is somtimes conjoyned with this Affect. It is either *hereditary*, or pethaps in so tender a Constitution contracted by infection, or lastly, it is produced from the indiscreet and erroneous Regiment of the Infant, and chiefly from the inclemency of the *Ayr* and *Climat* where the Child is educated. For it scarce holdeth any greater commerce with this Disease, then with other Diseases of longer continuance, wherein after the same manner the Blood in time contracteth for the most part this peculiar infection, yet it must be granted, that this Affect doth somewhat the more dispose to the *Scurvy* in regard of the want of motion and exercise.

Fourthly, and lastly, The *Strumatical Affect* doth somtimes associate this evil. But it is credible that it oweth more to other causes proper unto it, then to this precedent Disease. Although we deny not, but this may minister som occasion of invading, in as much as it rendereth the humors more viscous and gross.

Some other Diseases are peradventure somtimes complicated with this, but because they happen exceeding rarely

rarely, and have yet scarce fallen under our observation, we pass them by, for the present and proceed to the signs of the Disease, and the difference of the signs.



CHAP. XXI.

The Signs of the Rachites, and first the Diagnostical Signs.

WE distinguish the Signs of the Disease into three Chapters. The first containeth those Signs which demonstrate the presence of the Affect, and are called Diagnostical. The second containeth those that distinguish among themselves the differences of the Disease, and these are called, *Diacritical*, or *Discrepant*. The third comprehendeth those Signs which presage the event of the Disease, and they are termed *Prognostical*. In this Chapter we shall not treat of the first kind.

We divide the Diagnostical Signs into *Pathognomonical* and *Synedreontal*. And here the Physical Authors seem to be more strict in the definition of the word *Pathognomonical*, then the necessity of the nature of the matter doth require. For they will have it to be *Inseparable* and (as Logicians speak) *Proprium quarto modo*, that is, to agree, *omni, soli, & semper*. Indeed it must be granted, that such an Inseparable Sign, or, *Proprium quarto modo*, must be according to the most proper sense a *Pathognomonical* Sign. For whether it be present, or whether

whether it be absent, it is ever demonstratively significant : When it is present it certainly witnesseth the species of the present malady, and being absent it sheweth that that species of the Disease is not present.

But when we truly and seriously consider how seldom such Signs as these occur and of what useless consideration they will prove, the knowledge of them being thus restrained ; we are induced to think of the amplifying of the usual signification of the word. For although the Ancients to supply this defect, did substitute *συνδρομήν παθολογονομικήν* in the place of one true *Pathognomonical* Sign strictly taken, and we our selves do most willingly accept of, and approve this very same *συνδρομήν* ; yet seeing that this *συνδρομή* doth seldom appear from the beginning of the Disease, and by consequence seldom obtaineth the reputation of an Inseparable Sign, it necessarily followeth, that it also can but seldom perform the office of a Sign, *quarto modo propriè*, and therefore also that this notion is reduced to an extream narrow use. We are compelled therefore that we may fully prevent, or avoid this inconvenience to extend somewhat higher the signification of a *Pathognomonical* Sign ; yet so, as that we wil abate nothing of the Nature and certitude of the signification.

Therefore we define a *Pathognomonical* Sign to be somewhat appearing about the Patient, which certainly and infallibly demonstrates the Species of the Disease, And in this extended sens it may be divided into a Sign Inseparable, or, *proprium quarto modo*, and a Sign Separable ; namely, as being proper only, *Modo secundo* ; to wit, because it is competible only to one kind of Diseases, although not always. In like manner the *Pathognomonical* Syndrome, or *Concours* of Symptoms may be divided into two kinds, respectively Analogical to those

aforesaid. For sometimes it beginneth with the Disease itself, and doth inseparably associate to the very last period. So the pricking pain of the side, and acute Feaver, the difficulty of breathing, and the cough, if they be taken collectively, they are indeed a *Syndrome*, but such an one as is always equivalent to one simple *Pathognomical* Sign of the first kind, and doth inseparably accompany a Pleurisie from the first beginning to the very end. But sometimes the *Syndrome* or concourse of Symptoms is not compleat and perfect from the beginning of the Disease, yet afterwards it is made perfect by the intervention of the other Signs, and doth infallibly denote, the species of the Disease. For example, in the small Pox upon the first beginning of the Disease, the *Syndrome*, is so incompleat, that it doth not yet certainly determine the species of the Disease; but afterwards the Pox breaking out of the Skin very thick, and tending to maturation, then the *Syndrome* is finished, and the species of the Disease is put out of all doubt.

But that a Sign proper to one Disease alone (although not in the fourth manner) whether it be simple and solitary, or compounded of a concourse of many together, may suffice, when it is present to make a Sign truly *Pathognomical*: It is manifest from hence, because, when it is present, it doth as certainly and infallibly denote the species of the Affect, as a Sign doth, which is proper in the fourth manner. For that which agreeth to one species only, when it is present, doth necessarily infer the presence of that species also. Although therefore that a Sign proper in the second manner, be not Inseparable, and where it is absent, doth not determine the absence of the Disease, as a Sign doth proper in the fourth manner; yet when it is present, it is as we have said of the same value and certainty. For Physicians do esteem the
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dignity of the Sign by the certainty of the signification. For to that purpose they enquire out the signs of a Disease, that they may attain to a certain knowledge thereof. Therefore seeing that Signs proper in the second manner are equivalent in respect of their certainty, when they present to Signs proper in the fourth manner: we shall here comprehend them under the extended signification of *Pathognomonical Signs*.

You may say after this manner many after appearing Signs may be reduced to the *Pathognomonical* and are confounded with them. Be it so, provided that they do infallibly denote the species of the Disease. For in this respect they are worthy to be severed from the other after appearing Signs, neither will any confusion follow hereupon in the method of the semeiotical art, but rather the value and dignity of the Signs will by that means be more plainly and easily observed.

Of the *Synedremontal* or *affident* Signs we have nothing of moment to say, but will directly proceed to the Signs themselves as they are to be reduced into order. Yet no exact method must be expected from us, because for the most part the Signs flow from so many several fountains, that they will scarce suffer themselves to be marshalled into any accurate order. Wherefore, that they may be constituted which have some affinity among themselves, we have reduced the signs of this Affect to the subsequent Method.

We shall propound therefore

First, The Signs which relate to the *Animal actions*.

Secondly, Those which have reference to the *irregular Nutrition*.

Thirdly, Those that concern the *Respiration*.

Fourthly, Those that appertain to the *Vital Influx*.

Fifthly, Certain *vagabond and fugitive Signs reducible*.

cible to no Classis. Under each of which we shal subjoyne the valu of the Signs.

First the *Diagnostical* Signs relating to the Animal Actions, are these. *The loosnes and softnes of the parts. The debility and languidnes. And finally, the slothfulness and stupefaction.*

First, A certain laxity and softness, if not a flaccidity of all the first affected parts is usually observed in this Affect. The Skin also is soft and smooth to the touch, the musculous flesh is less rigid and firm; the joynts are easily flexible, and many times unable to sustain the body. Wherupon the Body being erected it is bent forwards or backwards, or to the right side or to the left.

Secondly, A certain debility, weakness, and enervation befallerh al the parts subservient to motion. This weakness dependeth much upon the laxity, softness, and litherness of the parts aforesaid: for which reason we have placed those Signs before this, as also this before the slothfulness and stupefaction in the next place to be enumerated, which ow much both to the loosness and softness. Moreover, this debility beginerh from the very first rudiments of the Disease. For if Children be infected within the first year of their age or therabouts, they go upon their feet later by reason of that weakness, and for the most part they speak before they walk, which amongst us English men, is vulgarly held to be a bad *Omen*. But if they be afflicted with this Disease, after they have begun to walk, by degrees they stand more and more feebly upon their legs, and they often stagger as they are going, and stumble upon every slight occasion: neither are they able to sustain themselves long upon their legs without sitting, or to move and play up and down with an usual alacrity, til they have rested. Lastly, upon a ychement increase of the Disease they totally lose the use

use of their feet ; yea, they can scarce sit with an erected posture, and the weak and feeble Neck doth scarcely, or not at all sustain the burthen of the Head.

Thirdly, A kind of slothfulness and numbness doth invade the Joynts presently after the begining of the Disease, and by little and little is increased, so that daily they are more and more averse from motion. The Younger Children who are carried about in their Nurses arms, when they are delighted and pleased with any thing do not laugh so heartily, neither do they stir themselves with so much vigor, and shake and brandish their little Joynts, as if they were desirous to leap out of of their Nurses hands, also when they are angered they do not kick so fiercely, neither do they cry with so much fierceness as those who are in health. Being grown greater, and committed to their feet, they run up and down with a wayward uncheerfulness, they are soon weary, and they love to play rather sitting then standing, neither when they sit, do they erect their body with vigor, but they bend it sometimes forwards, sometimes backwards, and sometimes on either side, seeking some props to lean upon that may gratify their slothfulness. They are not delighted like other Children with the agitation of their bodies, or any violent motion ; yea, when the Disease prevaieth they are averse from all motion of their limbs: crying as they are at any play that is never so little vehement ; and being pleased again with gentle usage and quiet rest. In the interim, unless some other Disease, Symptom, or cause of sickness doth come between, they are moderate in sleeping and waking, they are ingenious, not stupid, but for the most part of forward wits, unless some other impediments arise, their countenances are much more composed and severe than their age requireth, as if they were intent and ruminating upon some serious matter.

These

These Signs being taken together, unless they result from some evident wariness, or proceed from some primary affect of the Brain (which indeed hapneth very seldom in this tenderness of age) do constitute a sufficient *Pathognomonical* Syndrom of the first kind, & where they are present together, they certainly witness the presence of the Disease, & when they are absent together they infallibly attest the Essence of this Disease. But if at any time a wearisomness do bewray any Feaverish, or any other like Signs, they may easily be distinguished from these, both because the reasons of the weariness have gone before, and also because the Signs from thence arising do suddenly break out, and assoon vanish. But in this affect the signs do invade by degrees, and persevere, or else they are dayly more encreased. Now the primary Diseases of the Brain are distinguished by their proper Signs. And thus much of the Signs which relate to the Animal Actions.

The Signs which belong to the disproportioned Nourishment of the Parts.

Of how great moment the *Alogotrophy*, or unequal Nourishment of the Parts is in this affect, we have already shewed; we shall here therefore prosecute those signs which in some great measure depend upon it, and we shall present them as if they were to be beheld at one View.

First, there appeareth the unusual bigness of the Head, and the fulness and lively complexion of the Face, compared with the other parts of the Body. But although this Sign may presuppose some motion of the Disease before it shine out, yet is the Disease so obscure before the appearance of it, that it is accounted in a manner unperceivable:

perceivable : Therefore commonly this Sign sheweth it self more or less from the first beginning, and continueth till the departure of the affect, unless (as we have noted before) the pining of those parts supervene from some other caus.

Secondly, The Fleshy parts, espécially those which are full of Muscles beneath the Head which we have listed among the first affected, in the progress of the Disease are dayly more and more worn away, made thin and lean. This Sign doth not presently shew it self from the begining of the Disease, becaus it pre-requireth some notable motion of the Disease before it evidently appeareth ; yet in time it most certainly is exposed to the senses, and accompanieth the Disease to the last step be it either to life or death ; excellently demonstrating the motion and degree of the Disease by its encrease. Moreover this Sign being conjoynd with the former doth at least constitute a *Pathognomonical* Sign of the second kind, that is such an one as is proper to this Disease alone ; and where they are present together they infallibly denote the presence of this Disease, although upon their absence they do not equally signifie the absence of the Disease.

Thirdly, Certain swellings and knotty excrescences, about some of the joynts are observed in this affect ; these are chiefly conspicuous in the Wrests, and somewhat less in the Ankles. The like Tumors also are in the tops of the Ribs where they are conjoynd wth grizles in the Breast. We have noted abov in our Anatomical Observations that these tumors are not scituated in the Parts, but in the very Bones ; although this consideration doth scarce belong to them as Signs, seing that of themselves they are scarce conspicuous. This Sign doth also suppose some kind of motion of the Disease, neither is it
emergent

emergent a *Principio principiante*, as the Philosopher phrase it, yet it offers it self as an object to the senses sooner than any considerable extenuation of the parts. But where it is present, it constitutes a *Pathognomical Sign* of the Second kind, and without dispute witnesseth the Species of the Disease.

Fourthly, Some Bones wax crooked, especially the Bones called the Shank-bone, and the Fibula or the small Bone in the Leg, then afterwards the greater Shank-bone, and the undermost and lesser of the two long Bones of the Elbow, but not so much altogether nor so often; sometimes also the Thigh-bone and the Shoulder-bone. Again, there is sometimes observed a certain shortning of the Bones and a defective growth of them in respect of their longitude. This by chance was omitted above, where we gave the Reason of the Organical faults. Yet this affect doth seem to depend upon the same irregular nourishment; namely so far forth as the nourishment taken in encreaseth the Bones according to breadth and thickness more than length. From hence it comes to pass that some Children long afflicted with this Disease become Dwarfs. Hither perhaps may be referred that folding in the Wrists, the Skin it may be having better nourishment and more growth than the Bones of those parts, whereupon it must needs be contracted in the Wrists into a folding or wrinkledness. Finally, to this place also may belong a certain sticking out of the Bones of the Head, especially of the Bone of the forehead forwards. For it concerneth the common kind of viciated Figure and the *Alogotrophy* of the Bones. Yet this in the Bone of the Forehead doth evidently seem to depend upon the free nourishment of that Bone in his circumference, where-with it is coupled to the Bones of the fore part of the Head,

Head, and constitutes that seam called *Sutura Coronalis*, which lieth in the foremost parts therof. For herupon it must needs be thrust forwards. And indeed in that place it is plentifully nourished without any difficulty, becaus this Bone in Children is cartilagineous towards that Seam. And this also was pretermitted above where we discoursed of the Organical faultiness, becaus we have but lately observed it.

Fifthly, The Teeth come forth both slowly and with trouble, they grow loof upon every slight occasion, somtimes they wax black, and even fall out by pieces. In their stead new ones come again though late and with much pain. This kind of Sign, as also that which we noted in the former Article, may be referred to the *Synedremontal* Signs, becaus neither of these is either perpetually present, or if it be present, it doth not undoubtedly confirm the presence of Diseas.

Some have imagined that the Bones in this Diseas are transfigurabile like wax ; But we have never seen it, neither have we received it from any eye witness who was not of suspected credit. Wherefore we reject this Sign as altogether Fabulous.

Sixthly, The Breast in the higher progression of the Diseas, becomes narrow on the sides, and sticking up foreright, so that it may not be unaptly compared to the Keel of a Ship inverted, or the the Breast of a Hen or Capon. For on each side of the middle it riseth up into a point, the sides being as it were pressed down. If any demand whether this Sign be solely appropriated and peculiar to this affect ; We answer, That the Breast may be a little encreased in an Atrophy or Phtisick, and less than the other parts of the Body, and so by consequence it may be narrower : but it can scarce so fall out according to the change of the Figure without an

Atrogotro

Alogotrophy, namely that which is proper to this Disease. Wherefore this Sign also when it is present, although the invasion of it be tardy must be reputed a *Pathognomonical* Sign of the second kind, because when it is present, it certainly denoteth the Species of the Disease, though not on the contrary. And thus much of the Signs which have reference to the unequal nourishment.

The Signs which belong to Respiration.

First, The narrowness and sticking up of the Breast already mentioned must be hither referred, wherof we then discoursed at large.

Secondly, A swelling of the *Abdomen*, and an extension of the *Hypochondriacal* parts, which hindreth the free motion of the *Diaphragma* downwards, and by consequence doth somewhat interrupt the breathing. Yet it must be noted that the *Abdomen* and the *Hypochondries* also in respect of their outward parts appear very lean and extenuated, but inwardly, namely in those parts which are contained in the Cavity of the *Abdomen*, they swell, from whence ariseth this fulness. This swelling proceedeth partly from the windiness of the Stomach and Guts, and partly from the bigness of the Liver and other Bowels. Sometimes also a watry moisture into the Cavity of the *Abdomen*, introducing an *Ascites*, joyneth in this conspiracy. This Sign is seldom absent, and yet it must be numbred among the *Pathognomonical* Signs, because it is common to many other Diseases.

Thirdly, A Cough is frequently present in this Affect, as also a difficulty of breathing, and many other faults of the Lungs, as Stoppings, hard Tumors, Imposthums

hums, Inflammations, a Coalescence of them, with the *Plura*, and the like; Yet these scarce deserve to be reckoned among Signs, because of themselves (whilst the Patient liveth) they are not sufficiently conspicuous.

Fourthly, Children afflicted with this Disease are averse from lying upon their Sides either the right or the left, or at least it is troublesome to them; namely, either because of the Coalescence of the Lungs with the *Plura*, or by reason of some Tumor on the contrary side, but to lie with their Faces upwards they are very much delighted. And these signs also being taken together will not amount to *pathognomonical* signs of either kind, but *syndrecionatal* only and are common to other Diseases.

Signs belonging to the Vital Influx.

First, The Veins and the Arteries are more slender than ordinary in the first affected parts, and less conspicuous than you would expect in a lean Body. But in the Face (respect being had to the gracility aforesaid in the other part) they exceed the just proportion. This perhaps is a *pathognomonical* sign, although it be difficult to be observed, and indeed not yet sufficiently sifted by us.

Secondly, The Puls in the Wrefts, and the other affected parts is small & weak, otherwise perhaps it is moderate, unless when a Fever is present.

Thirdly, A moderate Ligature cast about the Elbow or the Knee, doth not so soon swell and color the parts beneath and above the Ligature with Blood, as it doth in other sound Children of the same age.

Certain

Certain vagabond and wandering Signs:

First, An appetite to Meat and Deink that is either moderate, or unduly weak, unless where a Feaver is conjoynd.

Secondly, The Excrements of the Belly and Bladder do commonly resemble theirs that are in health, unless some other Disease do interdict it.

Thirdly, It is observed, that those which are sick of this disease do abominat sweet things, as Syrups, and Junckers condit with much Sugar or Honey: Perhaps also such things as these are hurtful for them, as also for those which are troubled with the Scurvy, because they thicken the humors.

Fourthly, Some have observed, That they have seen som Children affected with the *Rachites*, to weigh heavier than others of the same age and stature. If this be so, it must be attributed partly to the facility, and partly to the inequality of the Nutrition of the bony substance in this Affect. For when this weight can scarce be ascribed to the Flesh, which are here extenuated, it seemeth plain that this must be attributed to the bony substance: And seeing that the Bones in this Disease are not yet observed to encrease beyond measure in respect of their longitude, it followeth plainly, that it must be imputed to the thickness of them which is superfluously augmented. These are also common signs, neither do they merit a more worthy estimation. And thus much for the *Diagnosticall Signs*, the *Diacritical* now follow.



CHAP. XXII.

The Signs of the differences of the Rachites, or the Diacritical Signs therof.

❀❀❀❀❀ I shal insist in the same Method we propoun-
 ❀❀❀❀❀ ded above, wher we discoursed of the differ-
 ❀❀❀❀❀ ences, whose Signs we now enquire after.
 ❀❀❀❀❀ We have above deduced five differences from
 the very Essence of the Disease. The first was separable
 from the parts of the Secondary Essence, whether they
 were present or absent. But no other Signs must be ex-
 pected besides the very *pars present* or *absent*, which of
 themselves are subjected to the senses, and therefore they
 are numbred among the *Diagnostical* Signs in the second
 Classis in in the precedent Chapter.

The second difference was from the magnitude of the Disease; the signs of this are many and great, or few and gentle and present signs; namely, to be fetched from among the *Diagnostical* Signs above described:

The third difference was taken from the vehemence of the affect. This is distinguished by *the slow or quick encrease of the Diagnostical Signs.*

The fourth was from the strength of the Sick ; we have shewed the way to judg of the strength above : But the difference of a Disease arising from hence hath respect unto the *danger*, and therefore we refer the Signs thereof to the *Prognosticks*.

The fifth difference was deduced from the times of the
S Disease.

Diseaf. In which respect we have above reckoned up fix divers apparitions of this Diseaf: to wit, *The beginning, the encreaf, the ftate or confistence, the encreaf beyond the State, the true declination, the fuperious declination, or the paffing into another affect.*

It muft be known that the beginning of this Diseaf, befides the figns that difference this time from the encreafe, doth likewise require fome peculiar Signs of the prefence of this Diseaf: for it is a time of the greateft obfcurity, wherein the Diseaf doth as it were lurk and hide it felf, neither can an unattentive and in expert Phyfician eafily diftinguifh it from the *Diagnoftical* Signs above reherfed. For by this time moft of the *Diagnoftical* Signs aforefaid do not yet openly break forth; and fuch as make a difcovery of themfelves, prefent only fome obfcure impreffions to the Phyficians Obfervation. Therefore the indication of this time requires an accurate and *peculiar collection of the firft appearing Signs, and a diligent confideration of them*; but the other times, befides the *Diagnoftical* Signs above granted, want only a difference among themfelves, which is performed by an eafie induftry. Wherefore in the firft place we will declare the Signs of the prefence of this Diseaf, being newly begun or rather beginning, and then the difference between that and the encreaf.

The Signs of the prefent Diseaf of the Rachites newly begun.

First, *Diligent Obfervation muft be employed about the three kinds of Signs afcribed above to the Animal Affections*; namely, the loofnefs and foftnefs of the parts, the weaknefs and languidnefs, the flothfulnefs and numbnefs. For thefe do in a remifs degree, and fubobfcurely yeild

yield advantage to circumspection and heedfulness presently a *principio principiante*, as they phrase it.

Secondly, *The colour must be considered, and the habit of the Head and Face in relation to the Joynts.* For if the colour or the habit be more fresh and lively in those than in these, it presenteth a strong suspicion that this Disease hath taken root. For although the Bulk of the Head which is evidently encreased, and also the extenuation of the parts affected do pre-require some considerable motion and duration of the Disease before they appear, yet from the beginning a certain difference may be observed by an accurate attention or intuition in respect of the heat and the habit of these parts compared one with another.

Thirdly, *The wrests and the extremities of the Ribs must be noted.* For before the end of the beginning certain rudiments of knurls or knots begin to appear in the Wrests, and Excrescencies also in the tops of the Ribs.

Fourthly, *A kind of swelled fulness and stretching the Belly is conspicuous immediately after the beginning especially in the Hypochondriacal parts.* For the magnitude of the Belly compared with the magnitude of the Breast exceeds the just and due proportion.

Now these Signs collectively taken do assuredly demonstrate the presence of the Disease even from the very beginning. But if no sensible and manifest extenuation of the first affected parts do appear at the same time, in that very respect it is clearly distinguished from the encrease thereof.

The Signs of the other times are with ease differenced from one another by the descriptions of those times already laid down; yet because they may point to this place, and be dispatched in a word, we shall not decline the Annotation of them.

All those Signs which appeared at the beginning become more intense and evident in the encrease of the Disease, and many other and more grievous are daily accumulated. This time, as hath been said, is distinguished by the manifest extenuation of the first affected parts; but after the consistence by the continual aggravation of the Symptoms and Signs aforesaid.

In the State of the Disease the Signs and Symptoms are most outrageous and conspicuous. But so long as this time lasteth it neither manifestly encreaseth or decreaseth.

In the encrease beyond the State, the Signs and Symptoms exceed that condition which they retained in the indifferent State, both in respect of their magnitude and vehemence, and likewise in respect of the defection of the Spirits, and from that time forwards they daily grow worse and worse; for which considerations this time is distinguished, as well from the ordinary encrease, as from the means of the consistence.

But in a true declination *A kind of simple remission of the Symptoms and Signs tending to a perfect restoration of health* begins to discover it self; no other Signs of the invasion of any other Disease appearing.

On the contrary, in a spurious and illegitimate declination, *Other Signs of a new and succeeding affect are involved and complicated with the Signs and Symptoms of this Disease*: and these are distinguished according to the various condition thereof, and must be fetched from their proper Fountains, and ought not to be expected here. Moreover, if any particular Signs of any of these times do occur, which concern the event of the Disease, they must be reserved among the *Prognosticks*; and thus much of the Signs of the Differences of this affect deduced from the Essence thereof.

The

The Differences of the Causes distinguish the Disease into Natural and Accidental, and the Natural again into that which is properly so called, and that which is so termed improperly. A Natural Disease properly so called, because it is supposed to be actually present from the very Birth, requireth no other Signs than the *Diagnostical* recited in the former Chapter. For upon their appearance presently after the Birth the Disease is certainly known to be Natural.

But if those Signs appear not presently after their Birth, yet a Natural disposedness to this Disease may be inherent from the Birth, which afterwards actually breaketh out, and the Disease produced by it, may (though with some impropriety) be termed Natural, in regard of that dependance upon the Native faultiness. A Natural Disease in this sense, requireth other Signs than those which we have recited above, to distinguish it from the same Disease when it is altogether and plainly Accidental.

The Signs of a Natural Disease improperly so called.

First, *A weak and sickly Constitution, and the Diseases of both or either of the Parents*: As a cold and moist distemper, a *Cacochymy*, especially the *Phlegmatical*, a *Cachexy*, a *Dropsy*, an *Atrophy*, the *Phtisick*, the *Gonorrhoea*, the *Whites*, the *Venerous Pox*, the *Scurvy*, and the like affects.

Secondly, *The Slothfulness, Effeminacy, and Seditary Life of the Parents.*

Thirdly, *The Errors of the Mother during her going with Child*, all which things we have discussed above more at large, when we examined the Causes of this Disease in relation to the Parents.

Fourthly, *The Debility of the new born Infant when it proceedeth not from the difficulty and labor of the Birth.*

Fifthly, *The invasion of the Disease before he is exactly a year old; for this argueth some Natural disposition to the same.*

Sixthly, *If the elder Brothers or Sisters were before affected with the same Disease; for then it may well be suspected that some Infection was contracted from the Parents.*

Seventhly, *If no remarkable error was committed in looking to the Child after the Birth, and before the invasion of the present Disease. Of which we have spoken above in the Chapter of the Causes after the Birth.*

Eighthly, *If this affect hath not succeeded some other which was apt to leave this behind it. Of the Diseases of this kind we have also discoursed above.*

The Signs of a Disease newly and totally contracted after the Birth, are in a manner contrary to these, and therefore we shall only run them over.

First, *If the Disease cannot be imputed to any weak or diseased Constitution of the Parents, or their manner of life, or the errors of their customs.*

Secondly, *If no debility appeared presently after the Birth.*

Thirdly, *If the Disease began when the Child was above eighteen months old.*

Fourthly, *If the Brothers and Sisters were free from the Disease.*

Fifthly, *If any notorious errors were committed about the Child after the Birth.*

Sixthly, *If any Disease went before which might occasion a suspicion that this followed it. If there be a confluence of most or all of these Signs, they do sufficiently witness*

witness that this Disease must not be attributed to any Natural Infection, but to the future Errors and Irregularities. And thus much of the differences of this Disease in respect of the Causes.

Lastly, Som differences happen to this Discaſ by reason of other Diseases, wherewith they are peradventure complicated ; in which case, besides the *Diagnostical* signs already reckoned, some other may be desired as peculiarly proper to the complicated Disease. Nevertheless an accurat Description of them cannot be here expected, becauſ for the most part they are the same which are every where attributed to those Diseases by practical Writers. But becauſ som Diseases do more frequently accompany this than others, we wil briefly look into their Signs.

First therefore a *Hydrocephalus* or Dropsie in the Head being complicated with this Affect needeth somtimes no signs to make it known, but is sufficiently, yea abundantly manifest of it self: namely, either by the exceeding magnitude of the Head, or by the water that is outwardly contained under the *Pericranium* (which notwithstanding we suppose doth very rarely happen) or by som extrem opening and wideneſſ of the seams in the Head, water having gotten into them, and lifting up the *Dura Mater*, so that a soft and waterish tumor is outwardly perceivable by the touch in the spaces between the Bones. Many times the *Hydrocephalus* is somewhat obscure and requireth signs to discover it. First, Therefore all the inward and outward senses are more dull than otherwise they use to be in this affect. Secondly, The magnitude of the Head is somtimes greater than at other times. Thirdly, The Sutures, or seams in the accustomed places do gape more wide, and are closed again more slowly than they are wont to be. Fourthly, The Bone in the Forehead is

more outwardly sticking out, and in the other Bones of the Head you may observe certain inequalities and bunnings out of an unusual bigness.

Secondly, The conjoynd evils of breeding Teeth are thus known. 1. If the accustomed time of breeding Teeth be either approaching, or now at hand; for from hence ariseth some suspicion of pain from thence proceeding. This time ordinarily beginneth in the seventh month after the birth, and continueth til the Child be a year and six months old, and longer, if the Teeth come slowly; which hapneth very commonly in this affect; and it endeth when the number of the Teeth is compleat. 2. Children to mitigat the raging pain do use to put their Fingers into their Mouths, according to that old saying, *ubi dolor ibi Digitus*. 3. The Gums wax white on that side where the Tooth is to break out, and are somewhat hot in the touch. 4. The Teeth that come forth sometimes wax black or are loof, or fal out by pieces. 5. To these you may ad watchings, the loofness of the Belly, Feavers and Convulsions, which notwithstanding are chanceable Symptoms.

Thirdly, An Asthma is perceived by the very difficulty of breathing, when it doth not proceed from the stretching and fulness of the lowest Belly. But if withal there be a swelling or Imposthum, & that in either side of the Lungs, they can scarce endure to lie on the contrary side; but if it be on both sides, then they desire to lie erect or with their Faces upwards. The same thing for the most part hapneth in an Inflammation, with a growing together of the Lungs with the Pleura, as also in a Pleurisie, but then there are added, an acute Feaver, a Cough and spitting of Bloud, moreover in a Plurisie a pricking pain in the Side. The Phtisick is known by a diuturnal Cough, and a roundish and sometimes a purulent spittle (although

(although indeed Children do seldom spit out, becaus that matter which the Cough fetches up into the Mouth they swallow by the œsophagus) also by a putrid Feaver conjoynd, and by a sudden Colliquation in the parts. An Ascites is discovered by the unreasonable bigneß of the Abdomen.

Fourthly, A Hæstic Feaver bewrayeth it self by a continual heat, being somewhat more vehement than that in a Quotidian Ague, especially about the Arteries, and stil encreaseth after the receiving of meat; also by the swift and speedy consumption of the parts: a putrid feaver is known by the urin being at the begining cude, afterwards more concocted, then also from the extreame high color of it. Moreover, if it be an intermitting Ague, it is discernable by the inequality of the heat, the external parts being at the begining extreame cold, & afterwards excessive hot; also from the fits either constant or erratical; again, by the contraction of the Puls upon the approach of the fit, afterwards unduly encreased. A continual Feaver is known by an intensive and un-intermitting heat, also by thirst, roughness of the Mouth, and the altered color of the Tongue, and the like.

Fifthly, The Venerious Pox is supposed to meet in complication, if either of the Parents or the Nurs were before infected; if any ulcers appear in the Head, Mouth, and Nostrils; or if any eminent and crusted wheals break out, especially such as ordinary Medicins cannot subdue: if hard tumors grow conspicuous, or knots defiling the Bones in the Fingers with rottenness, or any other parts; if inquietness and bitter pains in the night-time alarune the sick; or if Bubbles break out in the Groyn.

Sixthly, The Scurvy complicated with this affect hath these signs: 1. They that labor under this affect do impatiently endure Purgations; but they who are only affected

fect^d with the Rachites do easily tolerate the same. 2. They are much offend^d with violent exercises, neither can they at all endure them. But although in this affect alone, ther be a kind of slothfulness and averſation from exercise, yet exercise doth not so manifestly, at least not altogether so manifestly hurt them, as when the Scurvy is conjoyned with the Rachites. 3. Upon any concitated and vehement motion they draw not breath without much difficulty, they are vexed with divers pains running through their Joynts, and these they give warning of by their crying, the motion of the Puls is frequent and unequal, and sometimes they are troubled with a Palpitation of the Heart, or threatned with a Lypothymie, which Affects ar for the most part soon mitigated, or altogether appeas^d by laying them down to the rest. 4. Tumors do very commonly appear in the Gums. 5. The Urin upon the absence of the accustomed Feaver is much more intens and encreas^d.

Seventhly, The Strumatical Affect, if extreämy complicated with the Rachites, is sufficiently conspicuous by Swellings obvious to the senses; yea, where many knotty Excreſcences do outwardly occur, it may be justly suspected that the like Tumors do lurk in the Bowels. But if the knots grow inwardly only, they are scarce discernable by any certain sign; for that Rule which some have observ^d, namly, That those who have short Necks, low and narrow Forheads, with compress^d Temples, and wide Cheek-bones, are subject to these strumatical Tumors and Excreſcencies, is too uncertain and fallible; Others affirm, That Purg^g Medicines taken otherwise in a just proportion will scarce work with those who are thus affect^d; but we answer from our own Experience That it is sometimes only, and not alwaies true. Thus much of the signs of the differences.



CH A P. XXIII.

The Prognostical Signs in the Diseas of the Rachites.

THis Diseas in its kind is not mortal, yea sometimes it is so light and gentle, as the Children affected therewith have been restored to health by the sole benefit of Age, the Vital heat being encreased and summoned forth to the external parts by the force of frequent Exercises. Yet it sometimes so vehemently prevaieth, that the imminent danger of life can scarce, yea sometimes cannot be prevented by the best and most prudent applications. Wherefore it is very necessary that a Physitian should first diligently contemplat the Prognostical signs of a diseas, that hemay be the better instructed to foresee the several events of it. But in general those things which abet the Diseas, that is, all such things as war against Nature, require a contrary consideration, and as thes are the stronger and they the weaker, so much the more grievous and pernicious is the Diseas. But becaus it is not obvyous to every one to give an accurate Judgment of Particulars from this General Admonition, it will not be impertinent or unprofitable to insert som particular and special Rules and Observations hitherto belonging.

First, *This Diseas properly Natural, or that which invadeth before the birth, is the most dangerous, and seldom, if ever, end in health.* For it argueth a deprivation
of

of the Seminary principles, and by consequence that the Spirits are very infirm; besides it insinuateth a vehemency in the causes.

Secondly, *The more early the invasion is after the Birth, the more dangerous (cæteris paribus) the Disease is:* for the Spirits are so much the weaker. In like manner, *The Elder Children, and such as go up and down, are more easily cured then yong Infants that cannot use their legs.*

Thirdly, *A Disease improperly so called; namely, that which in part dependeth upon the Natural Inclination, is more dangerous than that which is contracted by the meer error of the Nurse or Mother.*

Fourthly, *This Disease proceeding from som other fore-going Affects, is more dangerous than that which is introduced by an erroneous Regiment of health;* For it implyeth a precedent dejection of the Spirits.

Fifthly, *Som have observed, That Infants who have had red Haird women to their Nurses, have been most obnoxious to this Affect.* Yet we indeed suspect this rule of som fallability.

Sixthly, *Some affirm, That Girls are more frequently infested with this Disease than Boys, and more easily cured.* The truth is, we have not yet had any unsuspected experience of this. Yet we grant that Girls are of a more cold and moist temperament, which holdeth the greatest correspondency with this Disease, and for that reason probable it is that the Female Sex may be affected with the lighter causes, and for the same reason also be the sooner restored.

Seventhly, *This Disease doth chiefly invade the Cradles*

dles of the Gentry, especially, of those who live at ease, and fare deliciously; then of the poorer sort, by reason of the manifold and various errors which necessity introduceth as well in the diet of the Parents, as the Regiment of their Children; but it findeth the most difficult access unto those who are priviledged from such assaults by a mediocrity of fortune, and accustomed to undergo some pains-taking and labor, and are not destitute of necessary means to sustain life and a healthful competency to prevent indisposition.

Eighthly, By how much the more the first affected parts are extenuated, so much the more difficult *ceteris paribus* is the cure of the Disease.

Ninthly, The greater the Head is, the longer and the harder is the Cure. When therefore the Bone of the Forehead sticks much out forwards, it portendeth at least a long continuance of the Disease; the same also do the other irregular stickings out of the other Bones of the Head.

Tenthly, The weaker the Back-bone, the greater and more dangerous is the Affect. Wherefore they which are unwilling to sit upright, much more they which are not able to sit upright, but most of all they whose feeble Necks cannot underprop the burden of the Head, are in hazard of their lives. Moreover, by the Diuturnal weakness and bending of the Back-bone, Children become Crook-back'd, or some other waies incurvated, and the trunk of the Body is afterwards scarce reducible to its Native Figure.

Eleventhly, Great Swellings in the Bones of the Wrists and the ends of the Ribs presage the continuance of the Disease. Moreover, The crookedness of the Shank-bone, Shoulder-bone, or the Bone in the Arm, prognosticate no less. Again, The greater that the inflexion of the Joints

is, the more difficult and retarded will the restoration be.

Twelfthly, They whose Thigh and Shank-bones are much encreased, rather according to latitude and thickness, then according to longitude, for the most part become dwarfs.

13^{ly}. They who draw their Knees upwards and unwillingly, suffer them to be extended, recover not without som difficulty.

14^{ly}. When the Teeth wax black or fall out by pieces, there is som danger, and so much the more, the later they com again, that is, others in their room.

15^{ly}. All they who attain to the consistence of the Disease, escape the danger of it, being carefully lookt unto, unless perhaps som other Disease be conjoyned with it, or do accidentally com after, and disturb the Patient with a higher encreas. In like manner the declination of the Symptoms doth assuredly promise a restitution of health.

16^{ly}. If an Hydrocephalus be complicated with the Rachites it ever importeth great danger. But if it prevail far, as that the Sutures of the Brain pan do gape, and that som water gotten into the middle Spaces doth swell the Dura mater into a waterish and soft Tumor, it is mortal.

17^{ly}. A painful and laborious breeding of Teeth comes sometimes accompanied with most vehement Symptoms, and even threatneth death. But commonly it is violent and ceaseth in a short time; however, so long as it is conjoyned, it much accelerates the motion of the Disease. But the Dog-Teeth com forth with more vexation, than the rest and portend more danger.

18^{ly}. An Asthma (especially the Orthopny, when the Patient cannot draw breath, but with an erected neck

neck, and that difficulty of breathing when he cannot ly on either side) is very dangerous. For that prompteth to a suspicion of som Tumor, Imposthum, Pleurisie, or Inflammation of the Lungs, or som growing too of the Lungs with the Pleura, all which affects want not their danger.

19^{ly}. If the Ptsick be complicated with this Affect, it is for the most part mortal, especially if one and the same ulcer of the Lungs continue above forty days.

20. We affirm that if this Diseas be of any long continuance it easily changeth into the Ptytick, or a Consumption, or at least commonly brings a Consumption to the destruction of the Sick, unless som other affect peradventure, or grievous symptom do intervene, and prevent the Consumption by hastning death; as a Convulsion, the loud Cough, the swelling of the Lungs, (vulgarly called, **THE RISING OF THE LIGHTS**) a continual Fever, a Pleurisie, &c.

In the next place, We assert, That if a Dropsy of the Lungs, or an Ascites be complicated with the Rachites, it portends a desperate and deplorable condition.

Again, An Hectick, slow, putrid, and especially a continual Fever, consuming the first affected parts doth vehemently hasten the motion of this Diseas, and render it the more dangerous.

Also, If the Venereous Pox be consociated with the Rachites, be it hereditary or contracted by infection, it is almost incapable of remedy.

The Scurvy likewise conjoyned doth very much retard the cure, though less than the Pox.

In like manner Strumatical tumors either internal or external do not very much suspend the hopes of cure, though otherwise of themselves they are not easily subdued in this tender age. For the external parts

parts are exulcerated, or inflamed with insupportable pain, and do vehemently irritate Nature, and waſt the Spirits, but the internal much more, eſpecially, if they invade the more noble parts, or bring moleſtation to the adjacent members with their weight and bulk.

Moreover, whoſoever are not perfectly cured before the firſt five years of their age be ſpun out out, they afterwards for the moſt part live miſerable and ſickly, and being either Aſtematical or Cacheſtical or Puiſical they dy before they arrive to the conſiſtence of their age, or elſe they grow deformed, crooked, and dwarfiſh.

If Scabs, wheals, pimples, or the itch com after this Affect, it doth hopeſully expedite the cure.

Finally, They which eaſily endure any kind of agitation of the Body, cæteris paribus, are cured without difficulty.

Thus at length we have finiſhed the Hiſtory of the three kinds of Signs, according to the beſt faith of our obſervations hitherto. In the next place we ſhal proceed to the Method of praſtice, which comprehendeth the prevention and cure of this Diſeaſ.



CHAP.





CHAP. XXV.

The Method to practice and Indications in general.

THE Method to practice is divided into the
Therapeuticall and the Prophylactick part, or
 the Curative and the Preservative. We shall
 discours of the former in this Chapter, al-
 though perhaps we shal here also propound som things
 which are common both to the Prophylactick part, and
 the Eugieihal. But the Prophylactick in particular and
 uncommunicated we reserve for the close of this Tra-
 ctate.

The Curative part is usually called the *Method of Cure*, wherof, as of every other art, there are two general instruments, namely, *Reason* and *Experience*, the uniting wherof comprehendeth the whol skil of the Artift. Now by experience we understand not only the *History* of one or more *Diseases*, and the success of *Medicines*, but also the *observation*; that is, the application of the *Histories* unto those things, which reason dictates in the same affect, and that by way of *comprobat*ion or *disallowance*. In like manner, by reason we mean every operation of the mind, so as we do not only comprehend the third; namely, *ratiocination* either *demonstrative*, or *probable* and *Analogal*, but also the first and second, that is, a *simple apprehension*, *comprehension* and *division*. For this part

part of Medicine includeth or rather presupposeth the *Physiology, Pathology and Semeiotical* part, which certainly require a manifold exercise of every operation of the understanding. Again, no man can understand any proposition, who doth not first apprehend the simple terms thereof, nor any Syllogism, who is ignorant of the Propositions of which it consisteth; so that it is manifest that every operation of the mind doth meet with an employment.

Indication, That noble instrument of the Method of Cure (by the use wherof the Dogmatical Physitians do principally glory to discriminate their Sect from the *Empericks*) doth likewise vindicate a station among the parts of reason. But because some things both difficult and obscure do occur concerning this instrument which have not received an unfolding and full illustration, from the *Neotericks* themselves, we judge it expedient here briefly to unvail them by an examination. We will enquire therefore.

First, *what is Indication?*

Secondly, *unto which operation of the understanding it relateth?*

Thirdly, *Into what kinds and differences it is distributed?*

As for the first, although perhaps many significations of this word may be found among Authors, yet that is the best and most proper which is delivered by *Galen*, in his book *de Method. Meden.* *Indication* (saith he) is an insinuation or declaration of the consequence, that is of something to be don. In this sense *Indication* may be defined and described to be an objective action of the *Indicant* relatively considered, which representeth to the understanding the thing *Indicated*, that is, what may be helpful what hurtful, and by consequence what must be

electd and applied, what forsaken and avoided, that this Description or Definition may be the better understood, let us further examin what is here signified by the *Indicant* ? what by the thing indicated ? what the action of the *Indicant* is ? of what use distinction is of the thing indicated into helpful or hurtful, into that which must be chosen, and that which must be refused ?

First, Although those terms *Indication*, *Indicant*, *Indicatum*, or the thing Indicated may peradventure be extended to other Arts and Sciences, yet becaus it hath hitherto been only appropriated by the Industry of Physicians (especially of *Galen*) to the Method of Practice, their definitions which we shall here declare, shall have respect only to this Method, all other use of them being pretermitted.

The General Definition therfore of the *Indicant* must be derived from the most general Nature which doth indicate in our Art. The *Indicant* therfore may be defined in general to be a state of the Body as it is fluxible or movable, or rather, as it is actually influx or motion, relatively considered, namely, as it intimateth what is to be done in that particular.

First, We affirm that the *Indicant* doth perpetually imply some state or condition of the Body ; wherfore becaus that which is without the Body, and doth not yet affect it, is no state or condition of the Body, it can scarce rightly be said to indicate. The external caus therfore, which doth not yet affect the Body, is not the *Indicant*, although the aversion of it may possibly be the thing indicated. Secondly, the state of the Body as it is frail, or movable, or rather as it is actually in motion, is required to the Essence of the *Indicant*. For as *Galen* most luculently proveth to *Thrasjb*. If our Bo-

dy were immutable and perpetual, there were no need of Medicine, but becauf the heat doth continually feed upon the moisture, and becauf health it self in the most perfect state is frail and fluxible, yea actually fluitant, and in some measure is already flowed away, manifest it is that the Physitians Art and the Practical Duty of the Physitian are both exceeding requisite. For if the state of the Body and the alteration therof be only considered absolutely, a bare and naked speculation only resulteth from thence: but if it be considered in order to that which is to be done wherby the Physitian may rightly execute his duty concerning that state, presently it meriteth the denomination of a Practical Instrument, and is invested with the nature of an *Indicant*. For such a state doth indicate, as it is frail and in motion that care must be every way had of the health, and that that care must be exercised and practised with all diligence and circumspection. And consequently this very general *Indicant* doth point out, that which the general scope of the Physitians sought after, but it must not be expected that the consideration of the most general *Indicant* can represent any other thing than a most general action correspondant to the general scope. For if the Physitian desireth a higher prosecution of the particular scope, he ought to descend to more particular *Indicants*.

Secondly, The thing Indicated is a Medical Action required on the part of the *Indicant*. For the *Indicant* primarily and formally denoteth the action, but secondarily and by consequence the instrument wherewith the action is perfected. Therefore by way of an appendix let us ad to the proposed Definition, that secondarily, by consequence, and in a concrete acception, it includeth the Instrument wherewith that action is accomplished.

First,

First, We say, that the thing indicated is an action For the Physitian useth Indication to that end, that from thence he may collect what is to be done: you will say perhaps, that when the crisis is at hand or legitimately proceedeth, the thing indicated is an abstinence from, or a suspension of the action, and not the action itself.

We answer, That this abstinence in that very regard that it is enjoined advisedly and according to art, is evidently contained under some kind of notion of a Medical Action; and the same is to be said of any kind of prohibition of any action in our Art.

Secondly, We say that the thing indicated is a Medical Action, that is directing the Action to health. For the end of Medicine is health, and therefore that Action which doth aim at health is rightly termed a Medical Action.

Thirdly, We say, That the thing Indicated is an Action requisite and importing at least in respect of the *Indicant*. For every indicated action ought not presently to be reduced to Practice, neither can it be simply said to be requisite, but only in reference to the *Indicant*: wherefore it must be exposed to a further examination before the exercise of it can be resolved on; and if neither the Spirits do dissuade, nor no other contra-*Indicant* doth more potently resist, then it is simply requisite, and must be put in practice in its due time, with all possible convenience. And herupon the thing indicated is rightly distinguished into profitable and unprofitable. The thing indicated becomes unprofitable either by defect of Medical matter, wherewith it should be accomplished, or by the presence of a stronger Prohibent, or contra-*Indicant*.

Again, A thing indicated and profitable is rightly

subdivided into an *Indicate*, *Circumstantiate*, and *non-Circumstantiate*. The first by which is meant an Action rightly clothed with circumstances must be prosecuted without any delay. The second must be deferred until it have perfectly acquired due circumstances. We say fourthly, That a thing indicated in a concrete and secondary sens doth also include the Instrument, wherby the Indicated Action is perfected. As for example, the state of health doth primarily and formally indicate an act of conservation, but secondarily and by consequence it doth withal indicate the Instrument, wherby we conserve it. This passage of an Indication from the Action to the Instrument doth not seem to depend upon the sole vertue of the Indicant, but in part also upon some general certain and commonly received principles, as like things are conserved by the like, things contrary are cured by their contraries, and therefore we industriously said that such an Instrument is the Indication or thing Indicated in a Secondary sens, and by consequence inferred, and becaus it includeth the Action together with the Instrument, we termed it so likewise in a concrete signification.

Moreover, Seing that the Practical duty of a Physician hath great affinity with the Indicated action; we shall here consider wherein they unite in some agreement, and wherein they differ among themselves. The general Duty of a Physician is to attain (as much as in him lies) the end of his Art, namely Health. And that same obtaining of Health is in a manner the most general Indicated Action, yet this is distinguished from the general Duty of a Physician, becaus the Purchase, and restauration of Health is not alwaies attainable. Therefore although the obtaining of Health be perpetually Indicated; yet when that is impossible, the Physician

tian is disoblighd, seing that no man is bound to impossibilities, and so consequently, it is no part of his Duty. In like manner an Indicated Action is sometimes unprofitable for the reasons before alledged, in which case it appertaineth not to the Duty of the Physitian. Again, An Indicated action, though when it is profitable it must be performed in its place, yet so long as it continues an apparel'd and devested of due circumstances, it presseth not the Duty of a Physitian. For it is the part of a Physitian not only to prescribe things profitable in the Species, but they must be such, regard being had to time, order, and other conditions of a just and regular administration. Finally a profitable Indicated Action being robbed in all its due circumstances doth truly exact the duty of a Physitian. For a Physitian is obliged to execute such actions, and only such, at least when they are conspicuous.

Besides ; The scope and intentions of the Physitian having a diverse respect to the Indicated Actions and the Duties of the Physitian, and holding some commerce with each of them, we shall likewise here consider in what respect this falleth out. But in the very entrance into this Discours these scopes seem sometimes to be properly distinguishable into little notions or forms of enquiry after every Duty of a Physitian, and the things themselves to be enquired after. The forms of enquiry are nothing else but apt Questions or Interrogations, which subdivide every Duty of a Physitian into so many parts, as it containeth to be distinctly sifted and examined. *Argenterius* reckons up nine Forms of this kind : First, Whether ? Secondly, What ? Thirdly, With what matter ? Fourthly, How much ? Fifthly ? Of what kind ? Sixthly, After what manner ? Seventhly, When ? Eighthly, Where ? Ninthly, In what

what order a thing must be done? Others contract these to fewer Heads, but for further satisfaction the understanding Reader may consult with the Books. The real Scopes or things themselves to be enquired are those very parts, into which each Duty of a Physitian may be aptly distinguished. They are therefore so many in number as there are found parts in that duty to be examined. These Scopes thus found out differ not really, but only in reason from those that are yet to be found out, namely in respect of the diverse relation to the intellect seeking, and actually understanding. From hence it appeareth what affinity there is between these Scopes and the Duty of a Physitian, and also the indicated actions. For the notional Scopes or forms of Scopes, and the things themselves to be enquired after under those forms do both aim at the same mark, namely the distinct invention of all the parts of a Physitians Duty. But the things to be sought out are the parts themselves of the Duty aptly separated and disjoyned from one another the better to facilitate the invention and examination.

Moreover, Those parts of this Duty, in as much as they are found out by the force of Indication, are the very indicated Actions; so that the Scopes invented by the Indication, and the Indicated Actions do really signifie the same things. We say really, becaus the Scopes even when found out differ in reason from them as they are Scopes, seing that besides the Indicated Actions they seem to note together an intention of prosecuting the same Actions, as the Scopes not yet found out do intimate an intention of enquiring into them. Thus much of Indicates or things Indicated.

Thirdly, *The action of an Indicant is Objective and Indi-*

Indicant, as an Object besides it self, doth in som sort insinuate another thing to the understanding. Perhaps som may wonder, how an Object can represent any other thing besides it self.

We answer, Such is the Nature of relatives, that (as such) they cannot be conceived without an implication of their correlatives. For one relative in his proper consideration doth at least obliquely involve the consideration of another, and by that means it easily ushereth the understanding to the knowledg of the other.

Som may reply, If the force of the Indication be built upon the meer relation of the Indicant to the Indicatum, How coms it to pass that the use therof is restrained solely to the Art of Medicine ?

To this we answer, We deny not, but this instrument may be extended to other Arts and Sciences, as we have before insinuated. For in moral Philosophy it is lawful to say, that Vertu doth Indicate the protection of her self, and Vice the suppression of it self. But neither doth this kind of relation consist only between the States of things, and the Actions therunto belonging, but also between the terms meerly speculative, as twice two are four, a man is not a horse. But here we consider the *Indication* and the efficacy of the *Indicant* only in order to the Method of Physick, so as it wil not be here needful to extend the use of this instrument further, neither indeed did *Galen*, because it would contribute little to the scope therof. Yet we affirm, that every relation is not a sufficient basis of an *Indication*, but it must be such, as hath either an evident conformity and agreement between the *Indicant* and *Indicatum*, wherby they may be fitly marshalled into a proposition of undoubted truth ; or a disparity and repugnance of them among themselves
that

that so they may aptly be divided from one another; that is, they may be disposed into a negative proposition equally certain. Now because the propositions elected by this indication are certain and evident, not needing any higher proof: from thence it is manifest that every understanding that is Master of it self, not clouded with a veil of prejudice, nor wittingly ensnared with sceptical Sophisms and fallacies, must necessarily pay an assent unto them so soon as he understandeth the terms. Moreover, the Scepticks themselves, though in their disputations they will lie in wait to traverse any verity, how manifest soever it be, and busy themselves to equal the most certain principles with things extreamly doubtful, yet in performing the necessities of life, seeing that they relieve hunger by food, hoard up mony, avoyd stripes, and do these and the like things constantly and without any distemper of mind, they plainly discover that they are led by some bad disposition of mind, or governed by a desire of glory, or tickled wth a hope of victory in the contention, rather than they doubt really of the truth of such Propositions. In the interim, it must be observed, that the very Indication is fallible and deceitful, where the absolute nature of the *Indicant* or the *Indicatum* hath not been exactly understood before. For in this art of Indications, we do not presuppose only that a Physitian should always have learned before, and duly known what all those things are, which we call according to Nature, as also in what the Essence of a Disease, and all the parts thereof consist, and to have an exact knowledg of all the causes of an Affect. Yea, it is necessary that he understand all Medical actions, and upon occasion be able to render a ready account what alteration is, what heating, what cooling, &c. what evacuation, purgation, and the section of a vein, &c. what conservation, and the like.

like. For the Indication doth not make manifest the absolute nature either of the *Indicant* or the *Indicatum*; but presupposing this as already known, it representeth only a mutual relation; namely, either a strict connexion and conformity which they retain among themselves, or a disparity and opposition, whereby they may be formed into an undoubted proposition: but the certainty of the indicated proposition cannot exceed the certainty of the knowledge of the Indicant. Therefore if at any time we scruple the certain knowledge of the Nature of the Indicant, it is not safe to trust to the Indication alone, til it shal better be confirmed by som other Reason or experience. But this doubting must not be imputed to the Nature of the Indication, but to the ignorance of the Indicant.

Moreover, it must be considered that the relation of the Indicant in the Method of practice, doth demonstrate besides the evidence somewhat of duty in respect of the Indicated action, and that the propositions formed from the Indication do either explicitly, or at least implicitly insinuate that duty. As in this Proposition, a Dis-ease doth Indicate the ablation of it self, the ablation is decreed and resolved upon, as a requisit action on the part of the Indicant, that is a Dis-ease: as if one should say, a Dis-ease requireth or importuneth the removal of it self. Yet this duty of the action is more frequently and indeed much more elegantly expressed by the Participle in *dus*, as a Dis-ease is to be taken away: which Proposition in the fulness of its signification hath a manifest coincidence with the former.

There remaineth stil an objection to be answered concerning the action of the Indicant; and this it is, *If the Indication be the very action of the Indicant, how can it be called an operation of the understanding?* For all
wri-

writers refer the Indication to som generation of the understanding.

We answer, The Indication is indeed an action of the Indicant, but yet an objective action, and that it is united to the intellective faculty, and abideth in it as in its subject: Moreover, that the understanding a power, both actuated, and as it were informed by its subject. Wherefore although the action of Indication be objectively attributed to the Indicant, yet subjectively it is ascribed to the Soul, and especially to the intellective part therof, which is as it were the act and form of it. And from hence it will be most easy to reconcile Galen with himself, who sometimes defineth Indication to be an *Emphasis*, sometimes a *Catalepsis*.

Fourthly, It must be examined whether that distinction of an Indicated action, into an action helpful and hurtful may tend. For som may urge, that Galen doth perpetually affirm, that one *Indicatum* only can be insinuated from one Indicant; and that in his *Method. Med.* he doth affirm, *That they vainly attempt the Method of cure, who are ignorant that one thing is Indicated from one Indicant,* and that all who have written of this matter do seem to attest the same thing,

We answer, That Galen must be understood of the three distinct kinds of Indicants, which must by no means be confounded; nor their Indicates, that is, the things indicated by them. For that which a Disease doth properly Indicate, must not be attributed to the causes or the Spirits: In like manner that which the causes Indicate must not be applyed to the Spirits or the Disease it self. Finally, that which the Spirits Indicate must neither be ascribed to the Disease nor the causes. For in this respect one Indicate answereth to one Indicant, and he that observes not this, must unavoidably confound all things

things, and in the employments of art makes an unsuccessful use of this instrument, according to the judgment of *Galen*. But it must be considered, that in each of these kinds, the *Indicatum* may be divided into two parts, one wherof is an advantageous action, and to be prosecuted; the other is noxious and to be avoyded: yet each of them belongeth to one and the same kind amongst the aforesaid three, and is as it were a middle part of the whole Indicate: For the Spirits direct to an election of such things as may cherish and protect them, and to an avoirdance of such things as may in a further degree empair them: and both these actions concur to advance and ascertain the compleat and final conservation of them. In like manner, both in cure and restauration, and also in caution and prevention, there is found an action as well to be embraced, as abandoned; yet whether of them exceedeth the bounds of its kind, so that no confusion can from thence be feared. For whilst we cure, we make choice of those things that wil demolish the Disease, and we deliver the application of such things as wil augment it. In like manner, when we preserve, we take away the causes, and withal we shun the use of those things that may conspire either the continuation, or future breeding of them. And for this Reason in the definition which we have presented above of an Indication, we distinguished the action indicated into that which ought to be prosecuted, and that which ought to be waved: which very thing also we were about to do, in the enumeration of the particular Indications to this Disease.

It is now time for us to proceed to the second enquiry propounded at the beginning, namely, Unto which operation of the Intellective faculty the Indication belongeth. We say, first, That the Indication doth in some sort include the simple apprehension of each term, both
of

of the Indicant and the Indicate. For he can never understand a Proposition who is ignorant of the Terms thereof. Yet this knowledg is only preparatory and presupposed in the art of Indications, as we have already noted. We affirm secondly, That composition and division is an explicit operation of the Intellective faculty in the perception of an Indication. For the Indicant by force of his relation doth represent the Indicate to be aptly continued together into a relative proposition. Now that a Proposition thus constituted may in its own nature be so manifest and evident, that no man can reasonably doubt of the truth thereof, or need any clearer proof, is expressly taught by *Galen* — κατὰλήψαι ἀνευ τηρήσεως ἢ λογισμῶ; and again in another place — ἀνευ ὑποδείξεως καὶ παρατηρήσεως. Here some calumniate *Galen*, as if he had devised an art separated from all experience, and quarrelling with Reason; but because *Galen* intended nothing else, than that Propositions framed by Indication are of self credit, and need not any comprobatation from Reason or Experience, the Criticks may perceiv their own rashness and retract the scandal. *Senertus* indeed objecteth, that the Indication cannot belong to the second operation of the mind, because the Indicate is neither affirmed nor denied of the Indicant. But that learned man was herein mistaken. For although peradventure that the Indicate be neither affirmed nor denied of the Indicant directly, and by the bare Verb Substantive or Copulative (*est.*) Yet indirectly and obliquely it is manifestly predicated of the same, and after the same manner as it useth to be in relative Propositions. As for example, A sound State is the Indicant of its own conservation; a sickly condition is the Indicant of some remedy, &c. And if any man wil expresse the Indicate with his relation to the Indicant

cant by the participle in *deus*, than the Predication will be direct. As a sound State is to be preserved; a diseased State is to be cured, a Disease must be removed, &c. If the Learned *Senertus* can deny these to be Propositions, he may with the like facility deny that an Indication belongeth to this Operation of the Understanding; but if he must needs confess that, there is no room left for the denial of this. Now we have said that the Indication doth belong to the second Operation of the Mind, becaus the Understanding, in reference to the order of time, doth withal comprehend the mutual relation between the Indicant and the Indicate, and thereupon frameth a Proposition, which formation and contexture of the Proposition is the very Indication; and explicitly a second Operation of the Understanding. Now that the Understanding doth together at one time comprehend the Indicant and the Indicate in the Indication, is elegantly expressed by *Galen* in a decompounded word which he useth in the definition thereof, *συμφοροσπίπτι-σα κατέληπσις*: also in another definition, *συμπεροπλήει τὸ συμβέρον*.

We say Thirdly, That Indication *may likewise implicitly be referred to the third operation of the Understanding*; Becaus in the order of Nature the Understanding seemeth first to perceive the evident relation of the Indicant to the Indicate before it can conclude of the certainty of the Proposition from thence resulting. Although in the order of time the Mind (as hath been said) comprehendeth them together; neither is it necessary to form an explicit Syllogism, for the truth is, The Understanding can comprehend those things together at one time, which by the Institution of Nature are termed Successive, as the Sun and Light, Fire and Heat, &c. But in regard that this simultaneous comprehension

of

of an Indication doth include a certain dependance of the knowledg of the Indicate from the perceived relation of the Indicant, it supposeth also that the said relation is sooner perceived at least in the order of Nature, and that the Indicate is later understood and by an implicit bringing in, for a kind of transition, in respect of the order of Nature doth seem to be here implied from the relation of the Indicant, as the *Medius terminus*, to the Proposition constituted of the Indicant and the Indicate as to the conclusion; and this may be called an implicit reasoning.

We say Fourthly, That by circumlocution and circumstances of speech, an Indication may be reduced to an explicit reasoning or syllogism, or rather, that the same thing which we pursue & argue at by Indication is to be found out and proved by way of Syllogism. For the Reason of the evidance of an Indicated Proposition may explicitly be applied, as the *Medius terminus*, to infer that proposition. In the interim a Syllogism so pieced together will be either absolutely frivolous and childish, or at the best only explicatory. As if any one who would prove that a Disease were to be removed, should thus proceed: *That which is contrary to Nature is to be removed; A Disease is contrary to Nature, therefore a Disease is to be removed.* The *Medius terminus* (that is against Nature) is not the reason of the Relation of a Disease to the Ablation thereof, but it is only an Exposition of the general Nature of a Disease. For whosoever understandeth what a Disease is, doth at the same instant presently conceive something not natural. And therefore such a syllogism is only expository. Yet we do not suppose it to be alwaies unprofitable, becaus it may sometimes be serviceable to the conviction of a stubborn, or the information an ignorant Distemper. Hither also we may refer

refer the translation of an Indication from the Action to the Instruments by vertue of general Rules : Likes are preserved by their likes, Contraries cured by their contraries.

We say Fifthly, *That a Collation of the Indications among themselves, whereby we may guide our choice by the consent and dissent of the Indicants to what simply and absolutely ought to be done, doth necessarily involve the third Operation of the Understanding.* For the limitation of any Indication supposeth a middle term extraneous to that Indication, which being first understood, the limitation is inferred as a conclusion. For he that findeth out an external for a middle term (thereby to assert the verity of any proposition) doubtless he manifestly argues and disputes. Seeing therefore that besides the Indicant and the Indicate a third term, and the affirmation or negation thereof is required to the limitation of an Indication, evident it is that the third Operation of the Understanding is requisite to the Invention thereof. Therefore although simple Indications may subminister the first rudiments of Method to Practice, yet to the complement and perfection of disputing the Art must likewise be joyned with it.

We affirm Sixthly, *That the election of the Physical Matter in particular, and the apt and prudent administration thereof, doth not only imploy every Operation of the Understanding, but that it also requireth experience;* for without this, who can sufficiently understand to administer a dose of Scamony or of any other purging Medicament, or know what humors such and such a Plant draweth away by a peculiar propriety ? Again, in Medicines alterant there may perhaps lurk som hidden quality, which may be hurtful to the Patient, and this without experience cannot be discerned. We conclude there-

fore (the proper force and use of Indications being continued) that to a compleat method of Medicine all the dictates of Reason, and the contributions of Experience are pre-required.

We now proceed to the Third Title propounded at first, namely, Into what kinds and differences Indication is distributed. Som differences may easily be observed by what hath already been spoken, which therefore we shal here omit. Now here we distinguish Indication into *general*, *succeeding*, and *specifical*. The general is derived from the general Indicant, the succeeding from the intermediat kinds of Indicants, and the specifical from the lowest Species of them. We have already noted that the general Indicant is the very state of the Body considered in general, as it is frail and in motion; this state indicateth that health must be intended, which is the most general physical action, and the most general Indicate; yet this action is in som sort concrete, and equally includeth two general actions in the abstract, namely Conservation and Correction. For the general state aforesaid is also concrete, and comprehendeth two like Considerations in the abstract, namely, one of the parts yet qualified according to the prescript of Nature, which require a pure Conservation: The second of the parts somewhat degenerated from their integrity, which in like manner require a pure correction. These two actions are perpetually conjoyned in every work of Art. For he that conserveth, withal correcteth, that is, he rectifieth som irregularities; and he which correcteth, hath at the same time conservation for the object of his Undertakings. The complication of these actions is so subtil, that it seemeth to have posed that most acute Physitian *Argenterius*, who in his Book *Off. Med.* affirmeth Conservation to be that very Correction, which

which is exercised in the art of maintaining health. But his Error is twofold. First, because he supposeth Correction and Conservation in *ὑγιεινῇ* to be one and the same action, when indeed they are two distinct actions, however they are complicated in the Exercises of Art. For they are indicated (as we said before) from the several Considerations of the Indicant, and Conservation hath respect to those things which are according to Nature; but Correction reflecteth upon preter-natural faultiness. Moreover, They are perfected by instruments formally distinct, yea opposit: For Correction even in the very art of defending health, is accomplished by Contraries, but Conservation by Homogeneals; as in this Art we help Emptiness by taking Nourishment, contrary indeed to the Emptiness, but homogeneous to the Parts which are to be nourished: Therefore although these Actions be complicated in the Execution, yet indeed they are formally distinct, and ought distinctly to be entertain'd by the Understanding. The Second Error of *Argentarius* is, because he granteth the correction of Errors only to be the General Action of al Medicin, when as Conservation is equally universal and alike exercised in al the works of Art.

No man doubteth but we conserve in the *Hygienal* part, and that we correct. Also *Galen* demonstrats in his Book, whether the matters of preserving health belong to a Physitian. You will say, That *Galen* in that place doth prove every Medicinal Action to be correction, and that conservation is comprehended under the latitude of correction. But *Galen* must not be so understood, as if he intended correction to be a kind of conservation, seeing that (as we have shewed before) conservation and correction even in this art of preserving health are actions formally different and differently distinguished.

distinguished : for *Galen's* meaning is, that every Medi-
 cal action when it is actually administred, doth imply
 and comprehend correction, and in that respect may be
 called Correction, and so by consequence Correction
 will be the general Action of all Medicine ; yet *Galen*
 confesseth Conservation to be equally general. For what
 hinders but there may be two general abstracted Actions
 in Physick ? That doth not destroy, if any man have
 such conceptions, the unity of the Art, it rather indeed
 confirms it. For the unity of an Art consisteth in some
 community, which may be attributed to all the parts
 therof ; and this union is to be esteemed so much
 the more firm, as all the parts of art are reciprocally con-
 joyned among themselves by more communities. If ther-
 fore there are two general Actions, and those common
 to all the parts of Medicine, so much the more firmly
 will those parts conspire the advancement of the Art.
 Wherefore he contradicts not *Galen*, that affirms con-
 servation also to be a general Action of all Medicine ;
 seeing that the scope of *Galen* was only to shew the uni-
 ty of the Medical art by the community of that general
 Action, namely Correction ; now he might as easily
 have shewed it, if the nature of the thing had required
 it, by the community of Conservation. For in the Hy-
 gienal part of the most noble circumstance is the Con-
 servation of the whol concrete action, and therupon the
 whol action is denominated from the more principal
 part, and the Art it self an Art conservative. Although
 otherwise (as hath been said) it also includes Correſti-
 on. But in the *Prophylactickal* part the principal scope
 of the Medical Action is preservation, namely the cor-
 rection of the caus of the imminent Disease : yet this is
 so performed, and by such means which the present
 spirits can allow, but in no wise by such things as may
 destroy

destroy them. And therefore also in the *Prophylactical* part regard is had to the Spirits, and their conservation is Indicated.

Now after the same manner the whole concrete *Action* (although as hath been said, it also includeth Conservation) is called Preservation and Precaution from the more Noble part. Finally, In the *Therapeutical* part, although in like manner the whole concrete *action* be called *Curation*, and the art it self a *Curative Science* from the principal part of the *action*, yet to speak properly and truly all this *action* of cure may be divided into three abstracted parts, and evidently distinct ; namely, into the Cure of the cause, the Cure of the Disease, and the conservation of the Spirits. For the Vital or Conservative Indication doth evidently, and by the unanimous grant of all Physicians belong also to this part of Medicine, and must be consulted of in every curative *action* before it be undertaken. From whence it is manifest that this part likewise of Medicine doth perpetually conserve, that is, provide and foresee in every Cure, least the Spirits should receive more detriment than profit from the prescribed remedies. All these things therefore being thorowly weighed, we conclude, That a general Indicate is a certain concrete thing, and may be properly distinguished into two general abstracted *actions* which are exercised in every part of Medicine, and that in the work of art they pertainually make one compleat or complicated *action*.

Moreover, The general Indicate, namely the State of the Body, as frail and in motion may be divided, besides the parts or abstracted considerations already proposed, into three kinds, or rather three succeeding kinds equally and alike concrete : namely, into a sound state, a diseased state and a neutrality. These three

Species are the subjects of the three kinds of Method to Practice ; namely the sound state of the Hygienal part, the diseased state of the *Therapeutical*, and the *Neutral* of the *Prophylactical* part. These three states are also concrete Indicants, and respectively Indicate what is particularly to be done, or what the Physicians Duty is in all those Arts : namely a sound state indicateth the conservation of health ; a diseased state the removal of some affect, and the *Neutral* state that the caus of an imminent malady ought to be corrected lest it break out into a Disease. Now these three Indicates are alike concrete, and each of them as we have proved above, abstractively includeth both Conservation and Correction.

Finally, In a Diseased state the action of correcting is dissolved into two Species ; into the correction of Caus, and the correction of the Disease, and so here may be discovered three kinds of abstracted actions. For a diseased state brancheth it self into three Species evidently abstracted, into the Essence of a Disease, the causes of a Disease, and the Spirits or those things which remain in this state according to Nature. For those things which are preternatural and indicate correction in general, are here separated (as hath been said) into two parts, namely into the Essence of a Disease, and the Causes of a Disease ; and therefore there are three parts of this state, each of which do formally and distinctly Indicate. Three kinds therefore (that we may put an end to this matter) of Indications are to be considered in this state ; namely, from the Essence of the Disease, the Curative ; from the Causes the Preventive, and from the Spirits the Vital or Conservative. To the Causes we refer all impediments of cure, as also vehement Symptoms, and such as divert the Progress of
the

the Cure to themselves, for in this respect they are invested with the Nature of Causes. And thus much of Indications in general.



CH A P. XXV.

Indications Curative.

✻✻✻✻✻ E have already affirmed that these Indications are deduced from the Essence of the Disease, we shall therefore in this place slightly run over all the parts of the Essence of this Disease, that the Reader may perceive, what every one insinuates to be done.

First, Therefore the Essence of this Disease partly consisteth in a cold and moist distemper, this Disease therefore in respect of this part of its Essence Indicath, not only that all those things are to be avoided, which are in any wise endued with a faculty to cherish and augment that distemper; but also that the aid of such things ought to be implored, which may subdue the same; namely, hot and dry.

Secondly, This Disease partly also consisteth in the want of inherent Spirits, therefore not only all those things are to be avoided, which can any further scatter, and consume the Spirits; but such things must be elected which are vertuous to restore, cherish, and multiply them. Strong discussing remedies are therefore in this case to be declined, because withal they consume the Spirits: in like manner such as are extremely hot, for they

they cauf them to evaporate and vanifh into air ; but much more fuch as have power to difsolve the parts, as violent Catharticks. But the beft nourifhment muft be chofen, and Medicines that are eafy of Concoction, as much as may be, and amicable and benign to the Spirits.

Thirdly, The Effence of this Difcafe confifteth partly in a numbnefs or aftonifhment of the Spirits : this numbnefs infinuates a prohibition and abftinence from all fuch things as vehemently make thick and fix the Spirits or any other waies ftupifie them, as narotical remedies, and many Minerals, which participate of the nature of Lead, as Cerus, Litharge, Sinople or Vermilion ; and all fuch things as have power to excite the Spirits, to expel their ftupefaction, and to render them active and agile, are to be made choice of, as exercifes, motions, *Frictions*.

Fourthly, The Tone being over foft, loof, flavid, and withered, indicateth an avoidance of fuch things as are wont to mollifie, loosen and weaken the parts ; and that fuch Medicines are to be outwardly applied and inwardly given, as may render them more firm and fo- lid. The fame *Tone* as it is internally too brittle brings a fufpicion upon all fuch things as abound much with an inward flipperinefs, and feemeth to defire fome rough- nefs, or indeed aftriction in thofe things applied or taken.

Fifthly, The corrupted Vital Conftitution on the part of the Generation of the Vital Spirits is not fo con- fiderable ; but on the part of the diftribuxion of the Vi- tal Spirits, the inequality therof is of great importance, and indicateth a caution to be had of thofe things which promote the flux of the Blood towards the Head, as al- fo of fuch things as retard the paffage therof to the firft affected

affected parts, but that choice must be made of such things as stir the Pulses of the Arteries in the parts first affected, and temper those that are in the Head. A slow and diminute current of the Blood through the first affected parts indicateth the same things, namely an evocation of the Puls to those parts. But an over facile and slippery passage of the Blood through the habit of the parts, is coincident in its indication with the slipperiness of the *Tone* lately recited. A defect of the Vital Constitution on the part of the union sufficiently vigorous and pleasant between the Vital and the Natural Spirits, indicateth an election of such things as can both nourish and cherish the Spirits, and also excite them to a greater activity, and that their contraries ought to be avoided. The Vital heat, as deficient indicates almost the same thing as a cold distemper, provided that regard be had withal to the strength of the Heart and Arteries, and to the vigor of the Vital Spirits.

Sixthly, The unequal Nutrition Indicath those things which promote the even and impartial distribution of the Aliment and Heat. Or indeed that which is too liberal to the parts that are nourished beyond a due measure; the extenuation of the parts requireth a fuller Nourishment. The irregular magnitude of the Head, chiefly things extenuant and such as are of the flux from the Head. The Tumors of the Bones indicate the same thing; the crookedness of the Bones require such things as attract the Aliment to the hollow side, as moderate rubbings; but things repressing chiefly on the gibbous and bunched side, as strong bindings. The bending of the Joynts, insinuateth an Artificial erection of them, as much as is possible. The narrowness of the Breast pointeth to Pectorals, and such things

things as have a faculty to dilate the Breast; but the sharpness thereof indicateth such things as have a dilative Vertue.

Sevently, The imperfect distribution of Animal Spirits, and somewhat defective in the first affected part indicateth *Cephalicals*, and such things as facilitate the distribution, as exercises, rubbings, and the like. A defect of due stretching in the Nerves, or Nervous and Fibrous parts, indicateth those things as *Corroborate* the Nerves and strengthen the parts. Thus much of Indications Curative, the Preservative follow.



CHAP. XXVI.

Indications preservative.

These Indications are deduced either from the Antecedent or the present causes of a Disease. Those which flow from the former kind of causes concern the *Prophylactical* Part: here we only propound those which proceed from cause that are present and contained in the Body; namely, from common causes, or such as are proper to this Disease.

Now although that common causes do not seem immediately to attain to the production of the Essence of a Disease; yet even in this respect that they are esteemed an impediment, and may retard the cure, they Indicate their taking away.

These causes are either impurities, or excrementitious humors

humors collected and impacted in the first passages, which unless they be taken away, do not only infect the nourishment inward, but they somewhat dul, or otherwise hinder the appropriate Medicines. They indicate therefore an evacuation either by a gentle vomit, or by a lenitive purgation, as occasion shal rather perswade to this or that: or they are common causes deeper imbibed into the Parts of the Body, and these also require an evacuation. But seeing that according to this kind of common causes it is at the same time driven away and almost with the same Medicaments, as are the causes which are proper to this Disease, we shal conjoyn both the kinds of them in this present consideration.

The causes therefore which are proper to this Disease, as also the Common causes which have a deeper penetration into the Body, may be divided into Blood and *Cachoymical* humors. The Blood indeed, although it be rather deficient than redundant in the first Affected parts, yet in the Head for the most part it requires a particular evacuation, which usually is performed by scarification of the Veins in the hollow of the Ear. Hither likewise we may partly refer blisters raised between the first and second turning Joynt of the Neck, although these perhaps may relate over and above in part to the *Cachoymical* humors.

Cachoymical humors are divided into those which still flow in the channel of the Veins, and into those which are impacted in certain parts of the Body. The causes or humors flowing in the Veins do (primatily and intentionally) Indicate their evacuation. But if they be unapt for motion (as to the execution) then they require som previous preparation. But because it happens for the most part, that not al the humors are equally unapt, but that som are sufficiently flexible, and others not so,

So, but resist the Medecines, in this case they indicate a less evacuation and then a preparation.

Moreover, These humors in the chanel of the Veyns may be subdivided into Feaverish (namly, if there be a putrid Feaver) and not Feaverish. The Feaverish humors are either swelling, or not swelling. The swelling, that is, those which are unquiet, or impetuously agitated, do Indicate a sudden evacuation, at least a lesser, unless perhaps they are carried of their accord to the external and more ignoble parts, as it happens in the small Pox, the Meazels, and the like Affects. But if a Feaver be present, and that acute, and yet the humors are not swelling, they chiefly Indicate that peculiar preparation which they call coction, that by this means they may be obedient to the Medecine to be aftergiven, and than evacuation, but if the Feaver not be acute but Chronical, although the matter be not irritated, and yet som part of it be sufficiently flexible; in this case, a lesser evacuation is first indicated at any time of the Disease, and afterwards the coction of the relicts, that they also in their time may be evacuated.

The humors contained in the Veins which are not Feaverish, if they are fluxible, they first indicate evacuation: but because in this Affect slow, gross, and clammy humors are almost perpetually present, preparation (at least wher a lesser evacuation hath gon before) is first Indicated; and indeed the viscus humors Indicate incident, and the thick attenuant remedies. Again, when the Disease is very Chronical and extended to many months; yea, perhaps to a year and upwards, it is not to be supposed that the whol matter causing the Disease can at once be prepared or evacuated; wherfore in this respect it Indicateth, that we insist upon things preparatory and evacuant by turns. Besides we must know that

Cholerick humors require one preparation and evacuation, and Melancholy humors another, flegm another, and watry humors another. And that the preparation and purgation is Indicated variously according to the diversity of the humors commixed with the Blood.

The humors that are impacted in certain parts of the Body do much more require preparation before they are evacuated ; according to that of Hippocrates, *When you would purg a Body, you must first make it fluxible.* Neither doth a certain general purgation suffice to subda the humors, but such a preparation is required, that hath a peculiar reference to that part, in which they are inherent, and therfore the humors in the Liver require one kind of preparation, those in the Lungs another, &c.

Finally, Seing that the propounded kinds of all humors, after they are evacuated, may grow and breed again ; they Indicate an avoyding of such things which may dilpose the Body to an easy generation of such humors : And thus much of Indications Preservative, it remaineth now that we consider the Vital and Conser-

CHAP.

CHAP. XXVII.

Indications Conservative, or Vital.

His Indication ariseth from those things
 which are according to Nature. For Life in
 it self consisteth in these things; namely, in a
 triple Constitution of the Body, the Natural,
 Vital, and Animal above rehearsed.

The Natural comprehendeth under it

First, The Temperament.

Secondly, The Inherent Spirits with their plenty and
 vigor.

Thirdly, The Tone of the Parts.

Fourthly, The Structure of the Organs.

Fifthly, The Continuity.

The Vital containeth

First, The Generation

Secondly, The Distribution } of the Vital Spirits.

Thirdly, Their participation with those parts, unto
 which they are distributed; namely, from the union of
 them with the said parts, and the communicated heat.

The Animal comprehendeth

First, The Generation

Secondly, The Distribution } of the Animal Spirits.

Thirdly,

Thirdly, *The due Stretching of the Parts depending upon the Influx of the Brain.*

All these things because life consisteth in them, are called *Vital Indications*. But among Authors for the most part they are known by the common name of the Spirits, but this name is somewhat too gross, seeing that in propriety of speech, the Spirits are radicated in the said Constitutions, and are faculties of them. Yet we have no design to innovate the custom of speech, provided that the things may be understood as it is.

These Indicants so long as they continue firm and sound, they require only a general and ordinary conservation by the right use of the six non-Natural things; but when they are all alike vitiated or obnoxious to imminent hurt, they require not only a general conservation, but such an one likewise, as is mixt with cure and preservation. Again, Where some one Constitution, or some one part thereof is depraved more than the rest or subject to such depravation, besides the general preservation, it requireth in like manner an especial one to be associated to the peculiar Curation. Lastly, When a Constitution Subject to error, or actually erroneous is fixed to some certain part, it doth higher specify that conservation; namely, that respect may be also had of the part so labouring more than the rest.

But because some say, That the Vital Indication is the only, and that Conservation is the simple end, and that they cannot be further subdivided, because that all things, which are according to Nature are comprehended in the word Spirits, and that they Indicate one Action; namely, the preservation of themselves. We grant indeed that the Spirits, if (as we have already noted) they be improperly taken for their causes; namely, the
three

three Constitutions aforesaid, may in one word comprehend all things which are according to Nature, but then this word must be *Generical*, and divisible into three species; namely, the three Constitutions, as Spirits Natural, Vital, and Animal. We grant also that the end, or that the Indicated action is one; namely, Conservation, but by the unity of the *Genus*, not of the ultimate species. For those very things which are according to Nature, however they agree in the *Genus*, yet in the species they may differ among themselves, and require a different conservation; yea, it is possible that those things which conserv the Spirits on one part may impugn them on the other; as for example; Wine given may in one respect cherish and strengthen the Vital Spirits, or rather the Vital Constitution, but in the interim it may offend and debilitate the Animal Spirits, or the Animal Constitution. In like manner the Temperament requirerh one preservation, the Structure of the Organs another, and the Continuity another. Yea, the very different Constitution of the parts Indicates a various conservation, neither do we after one and the same manner or by the same actions provide for the special conservation of the Liver, Lungs, Brain, &c. Wherefore when som one Constitution is more infirm then another, or when som one part is weaker than another, it Indicates a proper conservation peculiar and special to itself, and therefore both Conservation and Conservants may be divided into their Species. For the Conservation & the Conservants appropriated to the Animal constitution, differ from those which are destinated to the Vital or Natural: And from hence the three first kinds of Conservation are to be deducted, namely, the Conservation of the Animal, the Vital, and the Natural constitution. In like manner the Conservation of the Li-

ver is accomplished by the use of the Hepaticals, and o the Lungs by *Pectorals*, &c. Yea, all parts of an eminent diversity do subdivide the conservation into so many more species. Thus much of the division of Conservation into its species.

Moreover, The same Conservation seemeth to be further divisible unto its parts. For this Conservation is somewhat complicated, and doth not only relate to simples, but in some sort to contraries, to wit, Indicates both Curative and Preservative, and either permitteth or disalloweth those same things being estimated with the Spirits. It seemeth therefore to be branched into three parts, into an election of like matters, into an election of contraries under a certain condition, and into a prohibition of the same under a diverse condition.

The election of like things is the most appropriated *Action* to Conservation, and seems withal to have reference to two kinds of things alike; namely, such as are easily assimilated, and are properly nourishments, and such which although they cannot be assimilated in respect of their substance, yet they contain within the same qualities like unto the constitution of certain parts, in respect whereof they are reputed amicable and familiar to Nature, and do cherish and strengthen certain parts.

You will say, *These are indeed Alterants and do belong to the kind of contraries.*

We answer, That in a diverse respect they may be referred to each kind, but in as much as they obtain qualities like unto the du Nature of the parts, although otherwise they alter some small matter, yet they are to be referred to the similaries. For the very nourishments do in some degree alter, and are directly contrary to emptiness, and conservation it self doth implicitly include a

certain correction, as we have shewed above. Now these indeed in regard of a middle nature, which they have between similaries and Alterants, are not called Medicaments, but Strengtheners, Conservants, and Cordials; Again, these are Indicated as Conservants by the peculiar debility of the Spirits, and as to be elected, and not only permitted, and so they are esteemed in the Books of Practical Authors.

The Permission of a remedy somewhat contrary to Nature doth likewise belong to this Indication. For such is the dignity and valu of this Indication, as it summons both the Curative and Preservative Indicates to an examination before they are reduced into practice, and doth not only moderate and limit the quality and quantity of the remedy, but also the very time of repeating it, yea, whatsoever appertaineth to the use therof, or the manner of using it, and al this least in any wise it should exceed the Spirits of the Patient, or be injurious to them: nor is the excellency of it thus circumscribed, but it requireth more; namely, that more profit and advantage may accrue to the things, according to Nature by impugnation of the Disease, then hurt or detriment by any violence offered to Nature. And under this Law and Condition. Vital Indication permitteth many things to be don, which of themselves are contrary to the Spirits, yet always in favor of health, never to the prejudice of Life.

A prohibition of a contrary is altogether a commanding *Action* of this Indication, and by a kind of Authority *dictates* this or that thing not to be don, (although it were otherwise Indicated) becaus perhaps it endangers life it self, or brings more disadvantage than benefit of health to the parts. And this is the third

and last force and use of this Indication. We shall
now

now in one word apply these things to the present Disease.

All Constitutions in this *Affect* are very weak and infirm; and this is manifest from the bare consideration of this tender age. But the Natural doth yet further suffer by the force of the first Essence of the Disease; and from hence also the Vital is somewhat weakned, and indeed neither doth the Animal escape wholly free, as was shewed above. Wherefore both a general and also a particular regard must be had to these Constitutions, as wel in the *Election* of Similaries, as in the permission or prohibition of contraries.

First, Therefore in this *Affect* you must make choice of the best nourishments, such as are easy of *concoction*, and as neer as you can agreeable to the custom and age of the Patient, to the time of the year, &c. the contraries must be abandoned, namely, such things as nourish little, are difficult of digestion, and incongruous to the custom, age, and season.

Secondly, Those things must be chosen which cherish and strengthen the weaker Constitutions, and the parts that are most *Affected*, and these must be either exhibited severally, or they must be mingled with nourishments or Medicines; but such things as are neither serviceable to this scope, nor otherwise Indicated, must be totally avoyded.

Thirdly, Benign and gentle evacuants, or otherwise sufficiently *corrected*, must be allowed in a moderate quantity, just and du interval of time being observed. But the contrary things; namely, violent and fierce purgers, especially such as are apt to dissolv the parts, or are exhibited in an undu quantity, or too often repeated, are forbidden.

Fourthly, Remedies alterant, or such as prepare the humors, or *correct* the Disease must be permitted; such also as are friendly and familiar to Nature, or such as may be made such by good company, that is, by composition or sufficient *correction*. Remedies violently alterant, extream hot, and vehemently discutient, or any other which in any wise resolv and dissipate the parts.



CHAP. XXV III.

The use and right administrations of the Indications aforesaid.

Having propounded the three kinds of simple
H Indications, and deduced them into their
 lowest species, we shal in the next place consider *the right use & administration* of them.
 The exact knowledg wherof seems impossible to be obtained without roade and experience. For it descendeth unto Individuals, and comprehends not only the *Electi-
 on* of a thing among so many Indicates simply to be don in the Species, but also *the invention of quantity, place, form, time, order, and matter of the remedy to be exhibited.*

The *Consent* and *Dissent* of Indications do contribute much to this invention. Now the *Consent* may be twofold: of *Coindication* and *Permission*. *Permission* may be either an *Advantage* or a *Loss* to him that permitteth

or

or neither of them. A *Permission* that cannot be granted *without hurt*, must never be allowed without the greatest circumspection, and so much the greater, as the damage may be the more to him that permitteth. For although the Permittent may part with somewhat of his private right to advance the publick good, yet in respect that he is a member of the whol he is supposed to be a gainer.

The *Dissent of Indicants* is twofold ; namely, either *Contradictory* or *Contrary*. The *Contradictory* among the Books is called *Interdiction* or *Prohibition*, and for the most part it is appropriated to the Spirits, unto w^{ch} in this respect we must always yeeld obedience. The *Contrary* is called *Contra-indication*, and this doth not simply forbid, but so far forth as it undergoeth the Nature of an impediment, or som more urgent Indicate.

First, *where Indicants consent, either by Coindicati- on or Permission, satisfaction if it be feasible must be gi- ven to al the Indicates : But if this cannot be performed Medicines of that Nature are to be preferred before the rest, which are correspondent to most, or at least to the most urgent Scopes. But if such simples cannot be found out, then you must institute an apt composition of di- verse simples one with another.*

The Essential parts of this Diseas, although they are very various, yet is there not any considerable disagree- ment among them, and nothing hindreth but in a great part they may be considered together. For Medicines temperarly hot and dry, may at once cherish the Inherent Spirits, and perhaps conduce to the scattrring of the numbness in them, and withal somewhat fortify the *Tone* of the parts, and facilitate the equal distribution of the Blood, and consequently the equality of the Nutrition : also it may increase vigor in the Vital and Animal Spi-

rits, prorate the Arteries in the first *affected* parts, and strengthen the Nerys : unto which Heads almost al^t the Indicates of the Essence of a Diseaf may not unaply be referred. Moreover, the Spirits also, although they prohibit all extream hot things, yet they allow of these as moderat, and very congruous to Nature. In like manner there is little or no particular repugnance between these causes and the Indicates, albeit in respect of time and the order of administration som dissent may be observed, as we shall see afterwards in due place.

Wherefore in what respect and how far these agree together whilst we intend a cure, we do at once respect not only the Spirits, but in som sort the caules, by choosing such curative remedies, or by mingling such ingredients with them, which are able both to attenuate the thick matter, to cut into the viscos, to open the obstructed passages, and the like. In like manner, whilst we are chiefly employed either in preservation, or in the rooting out of causes, we make choice of such evacuants, or ~~ell~~ we compound them with such remedies, as are also partly contrary to the Diseaf. And all these things we do to that purpose, as that (as hath been said) we may be subservient to the most intentions we can.

Now having found out the *actions* simply requisit in the Species, in the next place we shal enquire out their *du circumstances*.

1. In regard that this is a great Diseaf it requireth a *great quantity of the Remedy*, in respect of it self. For a *Remedy* unequal to the Diseaf cannot extirpate it. It is necessary therefore that the dose of the Medicine be equally to the magnitude of the *Affect*. But in this Diseaf the Spirits permit not so great a quantity of *Remedies* to be given at once. Wherefore that quantity must be divided & given by turns. For this is a Chronical Diseaf, and of
flow

slow motion, neither doth it necessarily require an hasty Cure, and although the Spirits cannot well endure either vehement Remedies or such as are given in a large dose, yet they permit the use of Evacuant Medicines by an *Epistaxis*. Wherefore by turns, we must sometimes make use of Remedies Preparatory, sometimes Evacuant, sometimes Alterant, and sometimes strengthening.

Secondly, For so much as belongeth to the place of administration, the general Rule is, that the remedy ought to arrive at the seat, and penetrate to the very Cause of the Disease. If therefore it must have a passage into the Vessels, it must be taken at the Mouth; but if it will suffice to touch only the thick Guts, it must be injected by the Fundament. If the humors be naturally ready to move upwards, expel them by vomit; if downwards evacuate them by siege. In like manner you must humor the inclination of Nature, and root out the causes by spitting, by Urin, or by sweating. Particular evacuations must be instituted in the very affected parts, or in the parts adjacent. For so the force of the Remedy doth the more surely make way to the seat of the Disease and the morbidical Cause. And for the same reason external and topical Medicines must be applied to the next convenient place. Yet you must know that there is a certain Sympathy between some parts, in which case the remedies are frequently administered to the part, wherewith that consent intercedeth, and neither to the affected nor the adjacent part.

Thirdly, *The form of the Medicament* doth partly depend upon the Rule last propounded. For if the scope be to lenifie the Jaws or the Windpipe, we chuse a licking or lapping form, that by degrees the remedy may slide over the affected parts, and stay the longer upon them. In like manner, if the Stomach be affected, we

often prescribe Pills, Pouders or Electuaries, that they may the longer abide in the Stomach. To the Kidnies we rather design liquid things, that they may the more easily be carried down to them with the wheyish part of the Blood. The forms do also in som part depend upon the very nature of the Disease, as in burning Feavers liquid things are for the most part convenient, dry things are scarce admitted; on the other side, in moist Diseases, and when the Belly is oversoluble, more solid forms are preferred. Finally, the forms of the Medicines do also partly depend upon the nature of the Ingredients. So Cassia worketh most effectually in the form of a *Bolus*; Hartshorn, Coral, and the like in the form of a Powder; in like manner bitter things, such as beget a vomiting, and stinking things are concealed in the form of Pills; sometimes also they are gilded, or elf they are enwrapped in Wafers, and exhibited in the form of a *Bolus*.

Now it must here be noted, that for the most part the form of the Remedy is not so considerable, as it gives place to the more easie and commodious administration, in respect of the Admission or Reception of the Sick. For many cannot swallow Pills, others presently reject their Portions by vomit, & others are perhaps averf from other forms. In this Affect, in regard that all Children almost are loth to take Physick, that form is to be preferred before the rest, which shall be observed to be least distastful to them.

Fourthly, As for the *time of action*, you must so endeavor to fit your administrations, that they may as little as possible be interrupted with times of eating, exercise, or sleep, for at this age the Spirits are scarce preserved sound and perfect, without an interposition of those things by just internals.

Remedies evacuant, opening, attenuate and incident, must be taken early in the morning upon an empty stomach; and if they must be repeated the same day, four of the Clock in the afternoon (upon an empty stomach likewise) is the most seasonable hour. Strengthening and astringent Medicines, and such as provoke sleep, are to be taken rather in the evening than in the morning; but perhaps som of these are most agreeable after meals.

Medicines that are mingled with the nourishment, ought to be grateful to the Palat, lest they subvert the stomach and hinder concoction, or caus a loathing of the meat, or els empair the Spirits.

As for the order of proceeding, there occur two general Rules. The former is, That that must first be don, which being premised makes way for the following Remedies, and therefore that ought first to be removed which hath the consideration of an impediment in respect of what must follow. The later is, That we must ever give our first help to the more urgent and weighty Indicant, unless som impediment intervene.

If the Question therefore be, *whether the Disease, or the Cause of the Disease doth first require the help of Physick?* The answer will be obvious according to the first Rule: For the causes are reflected upon under the notion of an impediment in respect of the Cure of the Disease; for they cherish it, and infringe the vertu of the Medicins. Wherefore, before that we are intent upon the vanquishing of the Disease, we premise all possible endeavors to root out the Cause, or at least to lessen, abate and retund it, that it may oppose no considerable force to retard the rooting out of the Disease. Yet in the interim whilst we are busie in the removal of the Causes, the Essence of the Disease must not be totally neglected, as we have before admonished. Yea when we have so subdued the Cause

tha

that it cannot for the present much interrupt the Cure, we may (the Causes not being utterly overcome and cast out) the more diligently and earnestly attempt the resisting of the affect ; yet with this condition, That if the Causes revert and become new impediments, that then we are obliged presently to undertake the subduing and evacuation of them : so that in this Chronical Affect, sometimes the Causes, sometimes the Disease must be resisted by turns : and the Spirits do better undergo this change of action, than if we should continually make our battery against the Causes, till they were absolutely rooted out.

Moreover, When the Causes of the Disease in this Affect are unapt for motion by reason of their toughness, grossness, and perhaps settledness ; they must first be freed from this impediment and prepared before they are evacuated. For according to the Rule of the great Dictator, *Quae movenda sunt, fluida prius facere oportet.* In like manner, that thickness, toughness and settledness of matter, if it be present, indicate Remedies attenuant, incident and opening. But these things are not easily taken the impurities still flowing back into the first Passages, for then perhaps they are carried along with the Medicines into the Veins, and more defile the Blood, or at least hinder the efficacy of the Remedies. These therefore have the nature of an impediment, and must be in the first place removed.

Lastly, Universal Evacuants must be premised before Particular and Topical Remedies, especially where it is not permitted at once to mind both intentions. For the Universal Causes flowing in the Body are easily surrogated in the room of Particular Evacuations, and renew the Afflux to the first affected part : but the thinner part of Particular Causes and that which is most apt for motion

motion is evacuated, but the thicker perhaps is more impacted. Wherefore Universal Causes yet flowing to and fro in the Body, as considered are Impediments in respect of Particular Evacuation, and by consequence must be first expelled.

The latter Rule was, *That we must relieve the more urgent and weighty Indicant first, unless there be an interruption of som impediment.* That is termed an urgent Indicant which threatneth the most danger. Now every such Indicant is supposed to induce great afflictions into the Body, and not without manifest danger to waist the Spirits. Therefore in this respect, we must sometimes first help the Disease, the Cause being neglected: Sometimes also we must neglect both the Disease and the Causes, and adress our endeavors to the pacification of the Symptoms, as in a vehement Flux of the Belly, long Watchings, profuse and immoderat Sweating, and the like. But even in these cases, we must have a prudent regard both to the Disease and the Causes, and when the urgent Symptom is corrected, or the violence of the Disease repressed, then we must return to the regular Method of proceeding; for this Rule belongs not to the ordinary and legitimate order of Cure, but to the Method of Necessity.

Moreover, to perfect the right administration of Indications, there is required an exact and accurat knowledge of the *Medical Matter* whereof we shal discourse in the subsequent Chapters.



CH A P. XXIX.

The Medical Matter answering to the Indications proposed, and first the Chyrurgical.

THE *Medical Matter* must be found out by Experience and *Analogismes*, or Arguments drawn by an answerable necessity from the Cause to the Effect; although the truth is we conceive not any other Reasonings to be absolutely excluded. It is vulgarly and not unaptly distributed into three kinds, The *Chyrurgical*, the *Pharmateutical*, and the *Diatetical*: Of these in their order.

The *Chyrurgical* commonly received and approved in this Affect, and famous above the rest, are chiefly two; *Scarification of the Ears*, and *little Fountains or Issues*. But our enquiry (as we shal see anon) shal be extended to many more, namly of Cuppin-Glasses, Leeches, Blisters, Ligatures, and Swathing-bands: But the opening of a Vein the Spirits cannot brook, as every one knows, who but observes the frailty of the age, the extenuation of the habit of the parts, and the smalness of the Veins.

The *Scarification of the Ears* shal lead our discours. The *Empericks* who undertake the cure of this Disease, make more of it than one would imagin. For in their practice they celerate it with great vaporing, and without it scarce hope for a happy cure. But we, although we dis-

disallow not this kind of remedy, have seen many Children successfully recovered without the use therof. And they themselves who attribute most unto it, for the most part take away no considerable portion of Blood. Yet some affirm that they have seen a large quantity of Blood drawn away with good event. However it be, it is credible that those Children do with most ease endure this remedy, and obtain most profit by the use of it, which are of a Sanguin complexion and wel habited, and who are affected with an *Alogotrophy*, rather than an *Atrophy* or a Consumption, or any other remarkable extenuation of the parts. Our Practitioners for most part repeat this operation two or three times in a week. They seldom do it with an Instrument or sharp Pen-knife, but most commonly with an ordinary blunt Knife, taking no notice of the pain and crying of the Child. Moreover, For the most part they perform it in the hollow of the Ear, but some extend it to the inward and outward circumference of the upper part of the Ear, yea to the whol circumference. No man hitherto as we know have attempted the Scarification of the hinder side of the Ear, although indeed it is not easie to give a reason, why it should conduce less being administred there than in the hollow part.

Yet it may be lawful for us to offer our conjectures why the hollow of the Ear should be chosen before the other parts for this operation, which notwithstanding we will not confidently assert, although we suppose we can at least probably assert it, if that be true which the most diligent Chyrurgion *Fabricius Hildanus* hath written in his *Observ. 4. Centur. 1. de nervo quinti paris*: For this conjecture is grounded upon this Observation, and if that be ruinous this perhaps must perish with it. The Conjecture is this, *The distribution and use of the*
Nerve

Nerve and of the fifth Pair before mentioned being supposed, Scarification in the hollow of the Ear may very conveniently both free that Nerve from any kind of oppression, and likewise shake off the numbness, and give it vigor. For the hollow of the Ear is the next place unto it which we can come at with an instrument. Wherefore evacuation being here made may immediatly drive away the matter which commonly oppresseth the very beginning of that Nerve, and withal causing pain and encreasing the heat, and may drive out all stupidity from within it, and ad vigor unto it. If this Nerve therefore (as that famous Chyrurgion affirmeth) or a part thereof be distributed unto the Marrow of the Back and never forsakes the Marrow of the Back, but shooteth out little Branches with the Nerve of the Marrow of the Back to the ends of the very Legs and Feet; it may easily be granted, that this Nerve thus delivered from obstruction, thus excited and having gotten vigor, may likewise in some manner excite the Marrow of the Back it self, and all the Nerves from thence arising, which by that opinion it doth accompany to the very end of the Body, and imprint some vigor in them. Wherefore Scarification being made in that place must needs be of greater efficacy, than if it were instituted in any other part of the same Ear, more remote from the aforesaid Nerve. The same may almost be said concerning the little wound here made by a blunt Knife. For some Practicall Physicians affirm that the excellency of this operation relates not so much to the quantity of the Blood to be drawn, as to the stirring up of pain in that part; which any man may easily reduce to the stirring up of the vigor of the Nerve of the Fifth Pair.

But omitting this Conjecture we will propound some other Considerations, in respect wherof this Scarification

tion may be useful in this affect. First, By this means we obtain a certain particular evacuation of the Head; which part, if any other is in this Affect oppressed with a particular fulness. Secondly, By the very evacuation of the Blood we somewhat correct the thickness and toughness therof, and by consequence we promote the more equal distribution of it, and a more regular and equal Nourishment of the Parts. Thirdly, By this means we in some sort drive away the astonishment of the parts.

It must be noted that this operation when it performeth a particular and local evacuation, doth not simply deserve the first place in the Method of Cure, but must follow in its order, Universals being premised.

Lastly, It seems to be ridiculous and superstitious which some are busie about when they administer this Scarification; whilst they fasten the Blood of the right Ear suck'd up into Wool to the left *Hypochondry*, and the Blood of the left to the right. Thus much of Scarification.

Issues in this Disease are much approved, and we have known some Children cured only by the help of this means. For it doth not only perform all those things, which even now we ascribed to the Scarification of the Ears; but more particularly it is a powerful remedy against the *Hydrocephalus*, both Curative and Preservative, and very much conduceth to lessen the unusual magnitude of the Head, and to evacuate the superfluous watriness therof. And lastly, to repress the inordinate encreas of the Bones. Also it manifestly drieth up the too much humidity of the Spinal Marrow, exciteeth heat, strengthens the Nerves, and expelleth the astonishment.

Now becaus this kind of remedy is properly a little
Ulcer;

Ulcer, and causeth some small pain to the Child that hath it, and bringeth dayly some trouble to the Nurs, it ought not to be prescribed, unless the greatness of the Disease be such that we despair to conquer it by other remedies without the concurrence of this.

This little Fountain must be made between the Second and Third turning Joynt of the Neck. Some Burn it with actual Cauterising, but we disapprove of this way in regard of the vehemence of the pain : Some effect it with a potential Cauterising : but neither do we like this, becaul all Causticks are aduers to the Nature of an Infant, insinuating some venomous quality, and at least do too much dissipate the Spirits, and weaken the parts. Therefore we allow rather of an Issue made by Simple incision with a sharp Penknife.

Some make use of Iron tongues contrived for this purpose, wherwith they take hold of the Skin, the place of incision being first mark'd with ink, and by a moderate compression they dull the sens of the part, and then they thrust in the Pen-knife through the middle of the tongs which is pierced with a longish hole, and so they make the incision. Having made the wound they stop in either an Artificial or a Natural Pease, putting upon it a digestive Plaister : upon this they wrap a Paper or a linnen cloath divers times doubled, and fasten to it as it were a Buckler made of some solid matter, unto which four swathing bands are sewed ; thus much of Issues. In the next place we shall examin some other kind of Chyrurgical Operations.

And first Leeches offer themselves. Truly we have not yet sufficiently tryed how beneficial the application of them may be in this Affect. But if we consult Reason, we suppose that more hurt than advantage may be expected from this remedy. For if they are applied to
any

any part of the Head, by reason of their continual sucking they would easily cause a more violent afflux of the Blood to those parts. And if they be applied to other parts, they draw the Blood from the parts which before had too little.

Secondly, Cuppinglasses are not (we conceive) so dangerous as needles; indeed we altogether reject those that are ministered with Scarification, not only for the Reasons just now deduced from the Leeches, but being moved both by fear of dejecting the Spirits by reason of the pain, and also in regard of the troublesome nature of the administration. Cupping-glasses without Scarification, as we began to say, seem not refusible either by the Spirits, or the Disease, or the causes of the Disease. But these are very little effectual, and we leave it to be perpended, whether the profit arising from the use of them, whatsoever it be, can recompence the trouble of the application.

Nevertheless it may happen by reason of the complication of some other Disease, that the use of them may be of some moment, as in a Pleurisie, a Phrensy, and when some dangerous Flux is imminent against some principal part; in which case, those perhaps that are adhibited with Scarification, may be admitted in great and strong Children. But then you must apply them to the turning Joints of the Neck, the Shoulders, the Hanches, to the inner parts of the Thighs, to the soles of the Feet, and to other places as the peculiar complicated affect shall require.

In the mean time it must be noted, that in an age so tender, you must make use of very small Cupping-glasses, and that they must be applied with a less flame than they are wont to be in others of mans estate, and that the Scarification, if at all it be admitted; must be done with a gentle hand.

Y

Thirdly,

Thirdly, As for Blisters, although hitherto we have not had sufficient trial of them, and although we banish from this Disease both septical applications, because they dissolve the parts, and also caustical, because they penetrate deeper and produce a cruisted substance, yet we conjecture that those *Pyrotical* remedies which only raise Blisters in the Skin may be sometimes profitably admitted.

You will say that Cantharides wherewith they are commonly made are extream hot, and besides suspected to be of a venomous quality.

We answer, That we may not here insert any thing of the qualities of Cantharides, we grant that which is asserted. But because they are administered only to the outward little Skin, and only to a little part thereof not much extended, and because as soon as the blisters are raised they are removed, the excess of their heat and their poyson scarce penetrates deeper into the Body, than the bottom of the *Epidermis*, and therefore this remedy may be applied without any notable harm or danger. But then you may demand what profit can arise from hence? We affirm, that it doth effectually correct a cold and moist distemper, and potently dissipate the astonishment of the Marrow of the Back, the Brain, Nerves, and the Nervous parts, and withal that they make all the parts more firm and steady, and stir up a stronger Pulse in the external parts; at which things are of no small moment in the cure of this Disease.

One amongst us affirmeth, that among other things he prescribed this remedy to a Child of two years old who was troubled with the *Rachites*, and was also fallen into a continual and malignant Fever, and grown almost frantick. Hereupon the Child found present and manifest ease, and after a few days was delivered from his

Fever

Feaver. Afterwards having purged him twice or thrice with an infusion of *Rhubarb*, &c. Beyond the expectation of all that saw it, he also subdued this *Affect* almost without any other remedies. But as you can scarce find any commodity without a discommodity: so neither is this remedy exempted from all inconveniences. For it is unpleasing, full of pain and molestation to Children: Moreover, for a time it interrupteth their exercise and pastime, in respect of which things, unless perhaps some other complicated *affect* do point at an interdiction of exercise, it may do much more prejudice than advantage. Again, the force of it suddenly wasteth, and afterwards by degrees is consumed, which doth not in all respects keep touch with a Chronical Disease. Finally, an Issu which is proper to Chronical Diseases, may very well supply its place in this *affect*. Wherefore we scarce admit the application of blisters in the cure of this malady, unless some acute Disease be complicated, which may require this kind of Remedy, as it falls out in the Cause propounded.

Now when this administration is requisite, it is most commodiously performed upon the turning Joynts of the Neck, unless some Issu have prepossessed the place; in which case you must administer them either behind the Ears, or four Fingers below the Issu. We deny not but it may be fitted to several other places in respect of the complication of other Diseases. But we here design the place which a peculiar reference to the present Disease.

Fourthly, Ligatures also may be referred to this Title, and indeed we grant, that sometimes they are not altogether useless in this *affect*; namely, if they be very moderate, and adhibited by just distances, and unto convenient places; but you must beware that they hinder not the growth of that part, wherunto they are applied:

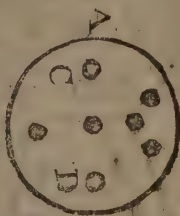
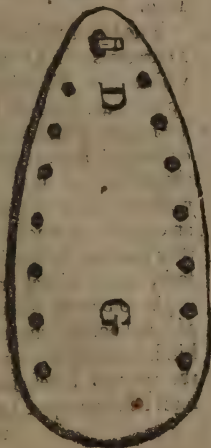
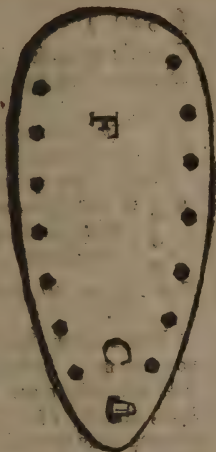
plied ; which is don if they be sufficiently loose ; and made of soft wool, if in the Day time, or for som part of the Day they are tyed up, and unbound at night, if they be fitted to the Thighs and Legs upon the Knee, and to the Arms upon the Elbow.

Yet Ligatures do here seem to conduce much to the stoppage of the Blood from flowing to the Head, and that it ought to be fastned to the outward parts that are extenuated : besides, this Remedy is good to retard the over slippery return of the Blood in those parts, unto which the Ligature is applyed.

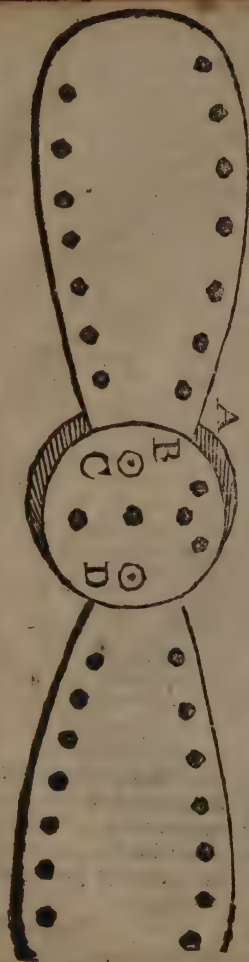
Fifthly, Hitherto also belong the *Fasciation* or swathing of certain parts, for this hath an affinity with Ligatures. For som use to enwrap the weak parts in wollen blankets, therby to strengthen them, and to cherish their heat ; namely, the Feet, the Legs, the Knees, and the adjacent parts of the Thighs. But you must be careful that the overstraightness of them hinder not their growth.

Others, instead of these swathing bands use buttond Boots lined with woollen Cloth ; thes they do not make use of only for strength and heat, but also to correct the crookedness of the Bones, and to erect the bending of the Joynts. Som ad little *Shingle's*, or *pieces, of whale-Bone*, but there are three things worthy of observation in the making of these. 1. That they may somewhat crush the prominent and convex part of the Bone. 2. That they scarce touch the hollow, but rather that they defend it from compression. 3. That they be well fitted to the part, and do as little as possible hinder the motion of

the Joynts, to this purpose
those Boots upon the out-
ward part to the knee may
be cut overthwart, or, *acros*
In like manner if there be
any need that the *Shingles*
upon the knee be extend-



ed to sustain and erect the
bending thereof, then it is
necessary that you fashion
them with a double Joynt
in the bending place, after
this manner.



(320)

The Form of the Articulation of the Splents.

A B Two Iron rings.

C D The Diameter of the Joints of the Splents.

• • • The Nails wherewith the Rings are fastned.

F G The two Splents.

Instead of the Splents you may more commodiously use thin plates of Iron, and the whol Instrument may be made of Iron.

The two Axel trees or Diameters *C D* upon which the Shingles or Splents are bended *F G* are fastned with two rings or hoops. But the hoops themselves *A B C* are made of plates of Iron of an exquisit thinness, that they may not be burthensom, and withal they ought to be wel smoothed, and polisht that they hinder not the motion of the Splents. These rings must be of an equal Latitude

tude, suppose about two fingers a cross, and they must be so fitted together, that on every side they may be paralels; only let there be so much distance between them, that they may fitly receive the tops of the Splents. Moreover, Those hoops must not only be coupled with a double Axel C and D, but also with five smal Iron Nails. Lastly, The whol composition of the Instrument must be so made, that it may be fast and fitly tied to the side of the bended knee sticking out, and withal that it may serve as well for the extension as the ordinary bending of it, but let it restrain the deflexion of it to either side, especially to the part sticking out. Which is the caus why the Axels are fastned with a double Hoop, namely lest the Joynts should be loos, and yield to the deflexion of the Knee.

In like manner the torsion and mishapen writhing of the Feet is also frequently corrected with Swathing Bands. If the Toes are outwardly distorted, they must every night be bound up, little balls of Cotton being put between the Heels and the Ankles. But if the Toes bend inwards, then you must bind the Ankles, and put a little Cotton between the great Toes.

Lastly, To straighten the trunk of the Body, or to keep it straight; they use to make Breastplates of Whalebone put into two woollen Cloaths and Sewed together, which they so fit to the Bodies of the Children, that they may keep the Backbone upright, repress the sticking out of the Bones, and defend the crookedness of them from a further compression. But you must be careful that they be not troublesom to the Children that wear them, and therefore the best way is to fasten them to the Spine of the Back with a handsom string fitted to that use.



CHAP. XXX.

*Of the Pharmaceutical matter, and first of
such things as cleanse the first Passages.*

His matter is of manifold and most noble
 * T * use, and satisfieth very many Indications.
 * * * For it comprehendeth al Medicaments, those
 * * * only accepted which concern the Chyrurgi-
 on, which have a primary relation either to the causes
 of the Disease, or the Disease it self, or the Symptoms.

It is divided into remedies *Internal* or *External*, and
 each of them into *Simple* and *Compound*. Again the
Internal may be subdivided into such as *cleans the first*
passages, as *Medicines Preparatory*. Into *Electively e-*
vacuant, and such as are *Specifically alterant* and *Eva-*
cuant, and finally into those that *correct the Symp-*
toms.

Among these the *Internal* obtain the precedence, and
 of those again such as wash away the impurities of the
 first passages, because these (as hath been already obser-
 ved) are justly accounted an impediment in respect
 of the following remedies, and simply ought first to be re-
 moved. But in all the *Titles* (as far as the Nature of
 the thing will licent or warrant us) we will place the
Simple before the *Compound*.

Moreover, these washing remedies comprehend these
 three kinds, namely, *Clysters*, *Vomits*, and *Lenitive*
Purgations. The

The use of Clysters, and some forms of them.

The Injection of Clyster-pipes, before we more exactly and earnestly attempt the Cure, is then chiefly pre-required, when the Belly is costive, and the Excrements are hardned ; or when some windy humors torment the Guts, or some vehement pain in the Bowels afflict the Patient. In which cases they may not only be injected before any preparation, but also before a Vomit, yea or a Lenitive Purgation. These are frequently compounded of benign and gentle Purgers, sometimes also of such as have only a faculty to make the waies slippery, and to expel wind, but never of Cathartical ingredients that are violent they are to be injected warm or lukewarm, and after a long abstinence from meat. We shall present some forms.

Take Cows new-Milk, warmed, four or five ounces ; Anis Seeds beaten to Powder ten grains ; Course Sugar, one ounce, one ounce and an half, or two ounces ; The Yolk of one Egg : mingle them and make a Clyster ; to these may be added half an ounce of new Butter.

Take a sufficient quantity of an emollient Decoction. An Electuary lenitive half an ounce ; Syrup of Roses Solutive, and Syrup of Violets, of each six drachms ; Oyl of Chamomel one ounce ; mingle them, make your Clyster and let it be injected lukewarm.

Take the Roots of Marsh-Mallows beaten together, half an ounce, or in lieu thereof, the leaves or Flowers of Mallows half a handful ; Flowers of Chamomel one pugil ; Hemp Seeds two drachms : boyl them in a sufficient quantity of Whey mingled with Beer : To four or five ounces of the Decoction ad of Diacassia, or Electuarium Passulatum half an ounce, Syrup of Roses Solutive, and

and Kitchen Sugar, of each one ounce; new Butter six drachms, you may if you see occasion ad the yolk of one Egg.

Take Stone-Horsdung that is new, one ounce and an half; The Seeds of Annis, Fennel, Mallows, beaten together, of each one drachm and an half; Flowers of Chamomel one pugil. Boyl them in a sufficient quantity of posset drink: In four or five ounces of the Decoction, dissolve ten drachms of Syrup of Violets, common Sugar, and Oyl of Roses, of each half an ounce: Mingle them and make your Clyster.

The use of vomiting remedies, and some examples of them.

Emedical Remedies or Vomits, do chiefly perform three things. First they evacuate crude or corrupt humors and all manner of impurities contained in the Stomach, and that by a shorter and more expedite way, than if they were conveyed, through the involutions and labyrinths of the Guts. Secondly, By an agitation and commotion raised in all the parts, especially the Bowels, they loosen the gross and viscus humors adhering unto them, or impacted in them, and frequently expel them, especially those which are collected in the Stomach and Guts; in which respect they are profitable against torments of the Chollick and very conducive to unlock Obstructions. Thirdly, They most effectually irritate the expulsive faculty of all the parts of the Body, and especially of the Bowels, and by this means many times upon a single application they compel forth the hidden and unappearing causes and fomentations of Diseases, and especially of intermitting Feavers. For by the very straining to vomit, the Guts are also instimulated to

cast out by siege. The Liver powreth away the Chol-
 ler by the Biliary Pore ; the sweat-Bread voideth his pec-
 u liar excrement by the new Vessel into the Guts ; the
 Spleen also perhaps unburdens in a plentiful manner his
 excrement into the Stomach by Vessels not yet through-
 ly known : The Kidneys exern through the *Ureters*,
 the Lungs by a strong Cough eject their Flegm through
 the Windpipe : The Brain emptieth it self of salt, wa-
 terish Rhewms, and matter by the Palate, the Nostrils
 and the Eyes. Finally the whol Body for the most part
 is rendred more prone to a *Diaphoresis* either by a ma-
 nifest sweating, or else by an occult and insensible
 Transpiration. In the mean time it must be noted that
 not all gentle Vomits, nor indeed the more vehement,
 if they be given in too smal a dose wil presently and ful-
 ly perform all these things, yet in their operations they
 effect more or less according to the strength or quantity
 of the Medicine, and indeed if the stronger be admini-
 stred in a full dose they effectually attain to the three
 marks propounded.

It is obvious, by what hath been said, to the conside-
 ration of any Reader, that strong Vomits prescribed in
 a full quantity are not competible to Children affected
 with this Disease, neither can their tender strength o-
 vercome and subdue so great tumults in the Body, and
 such an Universal evacuation so suddenly wrought,
 Wherefore this kind of remedy ought not to be prescri-
 bed to Children without diligent precaution and cir-
 cumsppection, and both the strength, quantity, and effi-
 cacy of the Medicine are duly to be prepondred. To
 this end therefore we shall set down some Cautious in fa-
 vor of unexperienced Practicers.

First, A Vomit is not to be provoked in this Disease,
 unless the humors tend upwards of their own accord, but
 then

then indeed they may be expelled by vomiting remedies without difficulty.

Secondly, Not unless Children are naturally or customarily apt to vomit, and do easily endure it.

Thirdly, In Bloud-spitting, the Pitsick and Consumption, in any flowing of Bloud at the Nose, or any internal opening of the Veins, and the like cases, abstinence must be enjoyed from this remedy.

Fourthly, Vehement vomits exhibited in a larger dose are here forbidden. For the fear is just and prudent that they may depopulate the Natural Spirits, and further consume the very solid parts which before were over-much extenuated.

It is necessary therefore that the Vomits here prescribed, be either in their own nature gentle, or corrected if they be vehement and administered in a lessened dose.

You will say, *If they be of a mild and lenitive faculty, or exhibited in a diminute quantity, they cannot compel the humors with any efficacy.*

To this we answer, Indeed where Nature contributeth little or no assistance, it cannot be denied; but in such cases we totally prohibit the administration of vomiting remedies; but presupposing both a fitness of the Body and Humors to this evacuation (as is required in the first and second Caution) even gentle vomits may expel such humors as are seated in the first passages. The thing must be said of the strong being prudently corrected and sparingly applied. For by reason of the correction and diminute quantity they do not much shake and discompose the Body, or provoke Nature; and again, through the proclivity of the Stomach and Humors they are sufficient to reward this Scope with a laudable success. We will now subjoyn some few Examples. Take

Take the tops of Groundsel half an handful, Raisons one ounce; boyl them in a pound of Ale to the consumption of one half. To three ounces of Colature; ad half an ounce of Syr. Acetos. simpl. Mingle them & drink them luke-warm.

Or

Take the Infusion of Crocus-metallorum in Spanish wine, made in a cold place and well purified, by subsidence one dram, a dram and an half, or two drams (according to the age and strength of the sick) half a dram of Syr. Acetos. simpl. Posset-drink an ounce and an half. Cinamon water ten drops: or instead thereof if there be any fear of Convulsions, one scruple of Aq. Antepilept. Lang. Mingle them and drink it warm.

Take the Juycce of the Leaves of Asarabacca half a dram, two scruples or a dram. Syrup. Acetos. simpl. two drams. Mingle them with a sufficient quantity of Posset-drink.

Take Salt of Vitriol from five to ten grains, Give it in Posset drink.

Lenitive Catharticks.

These Evacuant Medicines produce their Effects without tumult, and therefore they requir not so great circumspection as Vomiting Compositions, or such as are electively Purgant. Yet three things must be considered in the Use of them. 1. That they do not nauseat the Ventricle with such an ingrateful tast and favor as may render an abhorrence from all future Medicaments. 2. That they oppress not the Stomach by an immoderat quantity. 3. That the potion drunk be not presently vomited up. To prevent this last danger it will be a good way presently to bedew and moisten the Mouth

Mouth with some pleasant and agreeable Liquor, or with candid Cherries, or preserv'd Barberries ; or to temper the juyce of Orenge, or the like.

These Lenitives may be divided into *Simple & Compound*; and these again into such as are sold in the Shops, and such as are newly made and accommodated to the present scope of the Physician.

There are found very few Simples that of themselves wil satisfie this scope ; as *Manna, Cassia fistula, Aloe soccatrina, Tamarinds, Polypodium of the Oak*. But very ineffectually, unless they be compounded with other Purgative Ingredients (more follow) as *Fujubes, Sebestens, sweet Prunes and Damascens, Figs, Dates, the Pap or Pulp of roasted Apples, the Flowers of Mallows, Violets, Pellatory of the wall, Mercury, the Roots of Marshmallows, Liquoris, the four greater cold Seeds, the Seeds of Mallows, sweet Almonds, rare Eggs, Fatty substances, Butter, Oyl of Olives, Oyl of Almonds, Whey, and the like*. These although of themselves they are of smal efficacy, yet by the commixture of other Catharticks they require a gentle purgative quality, not to be contemned.

The Lenitive compound Catharticks which are sold in Shops, are these :. *Cassia extracted with, or without Senna, Diacassia, Electuarium Lenitivum, Diaprunum lenitivum, Electuarium passulatum, A common Decoction for a Medicine, A Decoction of Flowers & Fruits, Syrup and Honey of Violets, Syrup of Roses solutive, Honey of Mercury, Honey of Raisons, Conserve of damask Roses, Of the Flowers of Mallows, of Violets*. To these may be subjoyned som extempory forms. As

Take of the best Calabrian *Manna* six drams, *Cremor of Tartar* seven grains, *Posset-Ale* in which a few Aniseeds have been boyled an ounce and an half. Mingle and give them in the morning.

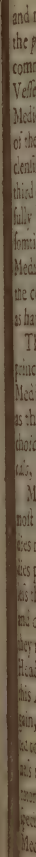
Take

Take of Polypodium of the Oak two ounces, White Tartar prepared two drams, sweet Apples twelve handfuls, Raisons of the Sun stoned one ounce: Boyl them in a sufficient quantity of water to a pound. In the Decocti-
 on infuse all night long Choice Senna an ounce and an half, Rhubarb two drams, Pulp of Cassia new drawn half an ounce, Tamarinds an ounce, Liquoris, the Seeds of Annis and Coriander of each a dram and an half: The next morning strain it through a linnen Cloth, and to eight ounces of the Decocti-
 on ad White Sugar six ounces; Boyl it a little; and when you have don so, ad to it Manna dissolved in Syrup of Roses, of each two ounces; Syrup of Violets one ounce: Make of them a Lenitive Syrup. Let the diseased Child take an ounce either in Succory water, or water of Pellitory of the wall, with a dram of the Juyce of Lemmons.

Take of Lenitive Electuary one dram and an half, or two drams; Syrup of Roses solutive two drams and an half; Cremor of Tartar ten grains; Posset-ale a sufficient quantity: Mingle and administer them early in the morning.

Take of Aloes washt, or Aromaticall Pills seven grains; Make two Pills with Syrup of Roses solutive, put them into two Candid Cherries the skins being pulled off, and let them be swallowed whol lest the tast be offensive, about sleeping time in the evening. In the morning give to drink after them, one ounce of Syrup of Roses solutive in Posset Ale. Or

Take of Syrup of Roses solutive six drams; Violets half an ounce; Juyce of Lemons one dram; Electu-
 arium Passulatum one dram: Mingle them with Succory or Pellitory water, and give them in the morning fasting. Thus much of those Medicines as clear the first passages.



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and not only the common, but also the special, by which the *peccant* matter in particular is conveyed to those common Channels. For there is one preparation of the Vessels of the Kidnies (which is chiefly expedited by Medicins of a slippery and loosning faculty) another of the Vessels of the Liver, which is don by opening, clensing, and somewhat astringent Medicaments : A third of the Vessels of the Lungs, which is most successfully wrought by Lenient and Maturant Remedies, sometimes perhaps according to the nature of the matter Medicins incident or atenuant being administred, or on the contrary, Administrations making thick, and such as have a vertue to arrest and avert the flux.

Thirdly, Those parts wherein the vicious humors principally flow or are lodged, require the admixture of Medicaments peculiarly appropriated unto them. And as this or that part is more or less affected, sometimes choice must be made of *Cephalicals*, sometimes *Hepaticals*, and sometimes *Pectoral* Preparations.

Moreover, (that we may comprehend together most if not all of the qualities of Preparatory Remedies required in this Affect) we say, That these Remedies prescribed by Art ought to be moderately hot (unless there be a Feaver present) also attenuant, incident and opening ; in like manner, that by a peculiar right they must have respect to the Liver, the Lungs and the Head, which parts for the most part are commonly in this Affect oppressed with a plenitude of humors : Again, That there are some things specifically appropriated to this Affect : and if such things are not in Readiness which are registred in the number of things preparatory, and dedicated to the Disease, than at least other Specificals ought to be mingled with the Preparatory Medicines.

These things being premised, we judged it expedient to set down such Simple and Compound Medicines as are usually sold in the Shops, and also some examples of decompounded Preparatory Remedies. Yet we forbid the expectation of all Simples, or perhaps of any one, that should comprehend all the qualities, which even now we attributed to those exquisite and appropriate Remedies; for then there would be no need of any Composition, and we shall reckon up such and so many that a prudent Physitian may select and contemper them among themselves, which being discreetly intermingled they may be correspondent to all the fore recited qualities.

The *Simples and Compounds* prepared in the Shops in readines are these. All the *Capillary Herbs*, especially *Tricumanes*, *Rhue of the wall*. *Spica Roots of Osmund royal*; the *Buds of the male Fernbrake newly sprung up*, *Polipodium of the wall*; *Hartstongue*, *Liverwort*, *Ceterach*, *Agrimony*, *Doddar*, *Scabious*, *Betony*; the *Leaves and Bark of Tamarisk*, the *Bark of the Root of the Caper tree*; the *Roots of Succory*, *Endive*, *Grass*, *Sparagus*, *Myrobalans*; *Liquoris*, *Raisons*, *Prunns*, *Damscens*; the *Seeds of Annis*, *sweet Fennel*, *Coriander*, *Caraway*, *Dill*; *Syrup of Maidenhair*, and *Betony*, *Simple and Compound*, *Syrupus Bizantinus*, *Syrup of Succory*, *Eupatory the five Roots*, *Stachadis*, and *Hortstongue*.

Out of these according to present Emergencies divers others may be *Decompounded*. As take the little *Buds or Gems of the Roots of the male Fernbrake five in number*; boyl them in half a pound of *Milk* to three ounces; let him drink the *Decoction* in a morning upon an empty *Stomach*. This is most agreeable to yong *Children* that are used to *Milk*. Or,

Take

Take of the Buds of male Fernbrake newly budded out of the Earth, one handful ; male Betony, Hartstongue, Liverwort, of each half an handful ; Flowers of Tamaris one pugil ; Raisons one ounce and an half ; One Chicken the Guts pulled out, and with a sufficient quantity of Oatmeal, make your Broath according to art. Let the Child take three or four ounces in the morning, and at four of the Clock in the afternoon, adding (if you pleas) ten grains of the Cremor of Tartar. Or

Take Maidenhair, Liverwort, Agrimony, Doddor, of each half a handful ; the Roots of male Fernbrake, Grass, Sparagus, of each half an ounce ; Flowers of Tamaris, one pugil ; Raisons one ounce ; white Tartar prepared one dram ; Liquoris half a dram ; Mace one scruple : Boyl them in two pints of Fountain water. To one pound of the Decoction ad 3 ounces of white or Rhenish Wine ; Syrup of Hartstongue one ounce and an half : Mingle them and make your Decoction, wherof let the Child take a draught every morning, and at four of the Clock in the afternoon. This is most prevalent and effectual against pertinacious obstructions in the Mesentery, Liver, &c. Or

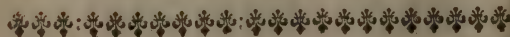
Take of Coltsfoot, Maiden-hair, Hartstongue, Liverwort, of each half an handful ; the Roots of sweet Chervil and Sparagus, of each half an ounce ; Spanish Liquoris two drams ; Mace a scruple ; Raisins of the Sun stoned, an ounce ; Fijubes by number six, Sebestens eight, two Figs cut in peices : boyl them in a sufficient quantity of Barly-water, and to a pound of the Decoction, ad Syrup of Maiden-hair, an ounce and an half : Mingle them together ; and this is a very good Drink for such as are troubled with an obstruction in the Lungs.

Take of *sweet Wort* two pound ; *Liver-wort*, *Maiden-hair*, *Haristongue*, *Scabious*, *Coltsfoot*, *Feather-few*, of each an handful ; *blue Figs* cut in pieces, *Raisins of the Sun*, of each half a pound ; *Liquoris*, *Anni-seeds*, of each two drams : boyl them over a gentle fire nine hours, strain it, and keep it for your use. It's good for that the former was.

Take *Salsaperrilla* cut and well beaten three ounces ; the *Roots of China*, *Harishorn shavings*, *Ivory*, of each one ounce ; the *Leaves of male Betony*, *Liverwort*, *Scabious*, of each three handfuls ; the *Buds of the Root called Royal Osmond*, and *Fernbrake*, of each two ounces : Boyl them in four gallons and a pottle of new Ale four or five hours over a gentle fire : Then after som hours respit strain it thorow an Hair-Sieve : afterwards put in of the *Juyces of Scurvigraß* and *Brook-lime*, of each half a pound ; a sufficient quantity of *Barm* or *Yeast* : Let it work according to the usual manner, put it into a little vessel and drawn out for the ordinary drink. This is most conducive, where there is any suspicion of the *Scurvy* or *Venerious Pox*, being complicated with the *Rachites*.




CHAP.





CHAP. XXII.

Remedies Electively evacuant.


 He matter of the Disease being prepared, and the passages opened to facilitate the evacuation, the next thing is, To consider what remedies wil electively expel the peccant humors in particular. Now these Medicines do partly concern the humors, and partly the parts wherein they are lodged ; but in each of them a du regard must be had to the Spirits.

The violent must be either totally prohibited, or else exhibited after a du correction or a circumspect diminution of the dose ; and for yonger Children, and such as are weak, they must be the less in quantity, and the more gentle in quality ; for great and lusty Children you may prepare stronger remedies and in a larger dose (provided that they exceed not the strength of the Child. In both causes it is safer to favor and go less then the strength wil bear, than to transcend it in the least degree : and in this affect it is altogether better to proceed by an *Epichrasis*, then together and at once to attempt the full evacuation of the peccant humors.

Moreover the predominant humors in the Body require proper and peculiar remedies ; as Choler, Medicines purging Choler: Flegm, Medicines purging flegm: Melancholy Medicines purging Melancholy : and watrish humors such as purge water.

Again

Again, If the Liver be oppressed with humors more than the other parts, such *Catharticks* must be chosen as peculiarly belong to the Liver. In like manner the Lungs being vehemently infested, or the Brain, and the other parts, such remedies must be chosen as are appropriated to those parts. But if there be not a ready supply of purging Simples peculiarly dedicated to those parts, that defect must be made good by a prudent commixture of such ingredients as are familiar to those parts.

Lastly, You must endeavor (as much as possibly you can) to make choice of such purgers as are directly opposite to the Essence of the Disease. In this respect we commend *Rhubarb* above all other simples. For it is a *Medicament* moderately hot and dry, very familiar to the inherent Spirits of all the parts, it gently dispelleth the Stupefaction of the parts, and strengthneth the softness & looseness of the parts, somewhat correcteth the internal slipperiness, summons the Puls to the Arteries, and encreaseeth the heat of the outward parts, and finally it cherisheth the vigor and activity of the inner parts, and especially of those which are subservient to nourishment. And in a word, That it exceeding rarely (provided that you give it in a just dose) causeth superpurgation, for it is a *Medicament* safe for all ages, and every Complexion.

These things being premised, we shal propound some simple purgative Medicines, and some examples of the Compound. For nothing hindreth, but that many of the preecited lenitives, may be commodiously referred hither, though in a different respect. For there they are considered as quickners of the lenitives which of themselves are somewhat dul: But here rather as they qualify and attemper the violence of the strong.

Simple and Compound purging Medicines which are sold in the Shops.

Manna, Cassia fistula, Tamarinds, all the sorts of Myrobalans, Rhubarb, Aloes, Syr. of Roses solut. syr. of Cichory with a double quantity of Rhubarb, syrup Augustanus, Scammony, Agarick, the seeds of bastard Saffron, Mechoacan, Jalap, Turbith, sweet Mercury, syrup of Roses solutive with Agarick, Epythymum, Polypody of the oak, Senna, Syrup Magistrabis against Melancholy, syr. of Apples of King Sapor, Diabazemer, Electar lenitivum de prunis. solut. Electar passulat Diacatholicon, Confectio Hamech, Benedicta Lexatrua.

Som Examples of extemporary Compounds.

Take syrrop Augustan one ounce, syrrop of Roses solutive two drams. Succory water half an ounce to dissolve the syrrops, make a potion to be administered in the morning upon an empty stomach.

Take the best Rhubarb beaten to powder eighteen grains syrrop of Succory with a double quantity of Rhubarb six drams, syr. ros. solutive two drams, water of the leav of Fernbrake six drams, mingle them for a potion, thus agreeeth best with Cholerick Constitutions, and such whose Livers are distempered.

Take the leav of Senna, Polypody of the Oak, Epithymum of each a dram, Rhubarb one scruple, Christal of Tartar, Fennel seeds of each a scruple, make an infusion in a sufficient quantity of fumitory water, to the strayned infusion, ad syrrop Magistralis six drams, Cinnamon-water seven drops; ell Langius his Antipeleptical water half a scruple: mingle them for a potion accomodated to Melancholy Constitutions.

Take the leav of Senna two drams, the pulp of Tamarinds

rinds six drams, the seeds of Aniſ, Liquorice of each half a dram, cremor of Tartar half a ſcruple, make an infuſion in a ſufficient quantity of fountain water for the ſpace of a night, with three ounces of the ſtrained infuſion make an emulſion according to art with ſweet Almonds blanched, half an ounce. The four greater cold ſeeds of each two ſcruples, for two doſes, adding to each doſe ſyrup of ſucchory with a fourfold quantity of Rhubarb, and the beſt Manna of each three drams. This qualifieth and evacuateth ſharp and acrid humors.

Take lenitive electuary three drams, Rhubarb a ſcruple, Cremor Tartar and Anni-ſeeds of each half a ſcruple, the flower of Burrage and Roſemary of each half a Pugil, Fumatory water as much as is ſufficient: after you have infuſed them, certain hours ſtrain it through a thick Cloth. And to an ounce and half of the infuſion ad ſyrup of Apples of King Sapor, half an ounce: mix them together for a potion.

Take Elder flowers a pugil, Rhubarb two ſcruples, Jalap, Mechoacan of each a ſcruple, Cremor Tartar half a ſcruple, Nymegs fifteen grains, firſt infuſe them, then boyl them gently in the water of broom flowers, & Rheniſh wine, of each ſo much as is ſufficient, ſtrain it. And to an ounce and an half of the decoction ad ſyrup of Roſes ſolutive half an ounce or ſix drams: mix them together and make of them a potion which will be very agreeable for ſuch Bodies as are troubled with ſlegmatick or dropſical humors, or a Cachexia.

Take of the leav's of ſenna a dram and an half, Rhubarb two ſcruples, Agrick trochiſcated one ſcruple, Tamarinds two drams, Anni-ſeeds, Cremor Tartar, of each a ſcruple, Roſemary flowers a pugil, make an infuſion in a ſufficient quantity of fountain water, and after a very gentle bayling to an ounce & an half of the decoction, ad ſyrup

Syrup of Roses solutive with Agrick, Magisterial syrup against Melancholy, of each three drams mix them together for a potion to cleanse the Body of mixt humors.

Take the leavs of senna one dram and an half, or two drams, Agarick trochisc. half a dram, Fennel seeds half a dram, flowers of Chamomel ten in number. Boil them in a sufficient quantity of fountain water, and to ten drams or an ounce and an half of the decoction, ad half an ounce or six drams of syrup of Roses solutive with Agarick, Manna three drams, mingle them for a Potion dedicated to evacuate thick and Flegmatick Humors.

Take sweet Mercury fifteen grains, conserv of violets one dram, powder of Gum Dragon one grain. Mingle them, and make them into a Bolus, with syrups of violets to be given in the morning drinking after it an ounce of syrup of Roses solutive, dissolving a draught of posset drink. This is most proper for such Children as are troubled as well with the Rachites as the worms, and on the contrary; also for such as have the French Pox, complicate with the Rachites: also to such as are troubled with a Struma.

Take sweet Mercury twelve grains, Jalap eleven grains, Nutmegs half a grain, the pulp of Raisins a dram. Mingle them, and with syrup of Violets make a Bolus to be taken in the morning. Instead of Jalap you may make use of Diagrydium, to three or four grains: This is proper for Children that are afflicted with Strumatical Affects, and such as are suspected to have the French Pox, and such as are difficultly purged, and are averse from Remedies of an ungrateful tast.

Take of sweet Mercury a dram, gummy Fallop half a scruple, white sugar dissolved in Betony water three drams or half an ounce, make them into Lozenges according

ding to art of a dram or two scruples and an half weight of which let the diseased take one at a time.

Take the best Rhubarb one dram and an half, Raisins of the Sun, the stones being pickt out, one handfull, a pint of ordinary Ale, infuse them for twelve hours, strain it and give it to Children that are greedy of drink in the night season.

Take Aloes succotrine seven grains, Rhubarb in powder eleven grains, with syrup of Roses solutive, so much as is sufficient to make it into pibbles which must be given in preserved Cherries, the stones being taken away, or else you may guild them for the more easy swallowing.



CHAP. XXXIII.

Specificall alterant Medicines.

He causes of the Disease being now prepared
T and in part evacuated, or at least so subdued,
 that for the present they cannot retard the
 cure, you must proceed to these Medicines
 specifically alterant, w^{ch} as it were fly at the very throat
 of the Disease, and in regard wherof the premised Medi-
 cines both preparatory and evacuant took place.

Now these Specificals may be defined to be, Remedies
 diametrically contrary to the Nature of the Disease, and
 such as directly impugn it.

These are either Simple or Compound, the Simple
 which hitherto we have had knowledg of, are these that
 follow;

follow : the root of *Osmund* the *Royal*, or rather the spike of the root, the middle being thrown away, the root of the male *Fernbrake*, or rather, the little buds before their peeping forth out of the earth ; the roots of *Graß*, *Succory*, *Asparagus*, *Madder*, *Eringo*, all the *Maiden hairs*, *Ceterach*, *Harts tongue*, *Liverwort*, *Betony*, the flowers and leavs of dead *Nettles*, *Borage*, *Sage*, *Rosemary*, *Tamarisk*, *Southernwood*, *Pontik Wormwood*, *The greater Sulendine*, *Saffron*, *Turmerick*, the roots of *Sarsaperilla*, *Salsaphras*, *China*, the three sorts of *Sanders*, the wood of *Guaiacum*, and its *Bark*, flower of *brimstone*, *steel prepared*, *Crocus Martis*, *salt of steel*, *wine steelified*, *syrup of steel*, *white and Rhennish wine Sperma Ceti*, *Musk*, *Ambergreece*, *Castoreum*, *Earthworms*, the *Livers of Frogs* and *yong Ravens*, *Woodlice*, washt in *white Wine*, bak'd inan *Oven*, and beaten to powder, and such like things.

But if any demand, *After what manner; or by what action these Medicaments do especially over-rule the Essence of this affect?*

We answer, That perhaps it is not necessary, that we presently fly to occult qualities, which for the most part is but the Sanctuary and refuge of ignorance : but that the primary and secondary parts of the Essence of this Disease above described ought to be reduced to Memory : for by making a comparison between those parts, and these Medicaments, we shal plainly discern an obscure contrariety and repugnance between them. For this Disease consisteth in a cold and moist distemper inherent in the Spirits together with want and astonishment of the Spirit and weakness of the parts afflicted : on the contrary these remedies heat and dry, cherish the Natural Spirits, dissipate that numbness which is in them and strengthen the parts.

More.

Moreover, In regard that these remedies with their heat and driness obtain withal a manifest friability and thinness of parts, it comes to pass, that they cut through all viscous matter, they attenuate all gross and thick humors, and procure a certain equality of all the juyces that have their circulation in the Sanguinary Mass, and an even distribution (consideration being had of the distance from the fountain of heat) both of heat and Blood. Herupon the external parts which before were lean enjoy a more liberal heat and nourishment, and the *Parenchimata* of the Bowels which were irregularly encreased, are delivered from thick and viscous alimentary juyces, and therupon are somewhat lessened: by this means that *Alogotrophy* or irrational Nourishment of the parts, from whence so great a series of organical faults resulteth, is corrected. Finally, These remedies do also strengthen and cherish the sinewy parts, and likewise the extream weakness of the Bone of the Back.

You will say, That all the Simples above recited by us, do not fully perform all these things. For the several kinds of Sanders, though they may by their driness, friability and thinness of parts strongly impugn this Disease, yet by their coldness they seem rather to come neer to the parts of the Disease; we say therefore that Simples of this Nature ought not to be given alone, but being commixt with some other, which may prevalently correct the noxious quality; in like manner some Simples extreamly hot, as *Saffron*, *Castoreum*, *Flower of Brimstone*, &c. are very repugnant to this Disease, yet you must refrain the administration of them unless they be duly attempered. Moreover *Sarsaparilla*, *Sassaparilla*, *Osmond the royal*, the kinds of *Fernbrake*, all the *Maiden-hairs*, *Hartstongue*, *Cetrach*, and the like, their

their heat and driness being conjoynd with a notable friability and thinness of the parts they contribute very much to the equal distribution of the Blood, as also to subdue many other parts of the Disease. But they scarce lend a sufficient strength to the sinewy and fibrous parts; wherefore they seem to crave an admixture of Cephalical Remedies. Again, *Lignum Vitæ*, by its heat, driness and friability, and by its Balsamical and Rosinist substance, doth very much strengthen the *Tone* of the parts, and is contrariant to some other parts of the Disease; yet becaus it helps very little the contemperation of the Juyces contained in the Sanguinary Mass, but on the contrary is rather an hindrance therunto, it ought not without great caution to be prescribed, and that in a small quantity and well corrected. Lastly, Among the Simples here recited, some are received to strengthen all the Spirits rather than to subdue the Essence of the Disease, as Sage, Musk, Ambergreece, and the like. which come not into use but when they are mingled with other effectual and more appropriate ingredients.

If any shall further demand, *which among all these propounded Simples are to be valued as the most nable and effectual*; we comprehend our Answer in these Rules.

First, They are the most noble Medicines, which joyntly make the strongest opposition against most parts of the Essence of the Disease.

Secondly, Those *Cæteris paribus*, are to be esteemed the more noble, w^{ch} directly affront the Essence of the Disease, especially if at the same time they advance the equal distribution of the Blood and Vital Spirit, whereby so many organical faults are corrected.

Thirdly, Such things as oppose the Disease most eminently by an essential contrariety, provided they be

not

not as well too strong for Nature as the Disease.

Fourthly, Those which are both repugnant to the Disease, and yet withal, grateful to Nature, in no wise offering any violence to her.

Fifthly, Those w^{ch} are most grateful & pleasing to the sick Child, & such as administred trouble not its Pallate.

These things being premised we shall now subjoyn some examples of compound Medicines.

Decoctions, and Physical Drinks.

Take the Spikes of the Roots of Osmund the royal, six in number; Pauls Betony, Hartstongue, Ceterach, Liverwort, Maidenhair, of each one handful; Sage, and Rosemary Flowers, of each half a handful: smal Raisons three ounces; Spanish Liquoris half an ounce; Mace two scruples; Boyl them in six pound of Fountain Water; take three pound of the Decoction and ad unto it three ounces of the Syrup of Maidenhair, mingle them and make your *Apoxem*. Let the Child take a draught of it every morning, another at four a clock in the afternoon, and a third in the night if he then call for Drink; yea if it pleas him, let him take it for his ordinary Drink. This is most proper for those who are sadly afflicted with the *Rachites*, complicated with a cough and an obstruction of the Lungues.

Take the Leaves of Royal Osmund, Hartstongue, Liverwort, Ceterach, the Flowers of Tamerisk, the Roots of the Male Fernbrake, of each a handful; Raisons two ounces; white and red Sanders, Sassafras Wood, of each two drachms; Coriander Seeds one dtachm; Mace one scruple; Sage Leaves, half a handful; boyl them in a sufficient quantity of Fountain Water according to art, to three pound; Let the Decoction be sweetned with Sugar or Honey, for ordinary Drink. This is best for such whose Liver is most afflicted.

Take

Take *Sasaperilla* cut and beaten, three ounces; the Roots of *China* cut into little pieces, two ounces: Infuse and boyl them according to art, in seven pound of fountain water, to four and a half: then ad two drams of *Sassafras* roots, the roots of *Osmond royal*, the leaves of *Hartstongue*, *Ceterach*, *Maidenhair*, *Archangel*, of each half an handful; *Spanish Liquoris* two drams; *Mace* a dram: boyl them to three pound. To the Decoction ad *Honey* or *Sugar* three ounces. Mingle them for ordinary drink. This is most conducive where there is suspicion of the *French Pox*, as also in *Strumatical Affects*.

Take the *Flowers* of *Tamaris* one-handful; the male *Pauls Betony* half an handful: bruif them gently, and infuse them in two pound of common Beer cold, in a stone or glass Flaggon, well stopt with Cork for the ordinary drink.

Take *Sasaperilla* eight ounces; *China* two ounces; *Sassafras* half an ounce; *Ivory* an ounce; *Osmond royal*, *Palus Betony*, *Hartstongue*, *Ceterach*, *Maidenhair*, *Liverwort*, tops of dead *Nettles*, of each two handfuls: cut them and bruif according to art, and boyl them in four gallons of new Ale till one be consumed; then when you have taken it from the fire, ad another gallon of the same Ale to it, and when you have added it, stir it up and down with a stick, and when you have done so, strain it, and when you have strained it, put the Ingredients in a Boultin-bag, and put a piece of Iron into them, and ad a bit of Leaven to it, and hang it into the Ale with a string, and let the Child drink it for its ordinary Drink; so soon as it hath drunk half of it, draw out the rest, and stop it close in stone Bottles for the Childs use.

Take wine of *Stull*, half an ounce; Syrup of *Succory* with

with *Rhubarb* two drams : let the sick drink of it every morning for five or seven daies or longer, unless some looseness of the Bowels or debility of the Stomach do advise a prohibition : in which case, instead of *Syrup of Succory with Rhubarb*, take *Syrup of dried Roses*.

Broaths and Panadaes.

Take *Hartstongue* and *Cetrach*, *Liverwort*, *Maiden-bair*, *Sage*, of each half an handful ; the *Bark of Tamaris*, *red Sanders*, of each two drams : Put them into the Belly of a Cock-Chicken or Hen, or an old Cock. Sew up the Belly, and boyl it with two ounces of *Malaga Raisins* in a sufficient quantity of *Fountain water*, adding also a sufficient quantity of *pure Oatmeal flower* : Make your Broath, and let it be soundly boyled.

Take the roots of *China* cut into smal bits, two ounces ; *white and medulous Sarsaperilla* sliced and well beaten, three ounces : Infuse them for a night in ten pound of *fountain water* : In the morning after a gentle bubbling, strain it, and to the Decoction ad *Hartstongue* and *Pauls Betony*, of each an handful ; *Mace* half a dram ; *Currance* an ounce ; and with *Mutton*, *Veal*, or a *Capon*, adding *Oatmeal* : make your Broath according to art.

But if thinner Broths be more desired, you may boyl a crust of *Bread* instead of the *Oatmeal* ; and if you would have it thicker, you may mingle with it the yolks of *Egs* and *grated Bread* : Moreover, to help a weak concoction, you may sometimes ad a few spoonfuls of *Wine*.

Panadaes also may be made of the same Broth strained, and boyled again with *grated Bread*, adding at length

length a little *Butter* and *Sugar*. The same likewise may be made of the *Decoctions* even now prescribed, unless peradventure they contain some bitter and unpleasant mixture. Morrover, the *Panadaes* and ordinary *Broths* may be altered with these ensuing *Pouder*s, and by consequence appropriated to the cure of this *Affect*; if the *Child* desire *Milk* most, let them be made in *Milk*; if the *Child* desire it thick, you may make it thick either with *Flower*, or *Oatmeal*; and if you mix a little *Saffron* with it, it will be the better. But if any thing in the *Pouder*s do nauseate and offend the tast, let them be omitted, and substitute som other things that may be more acceptable to the *Palat*.

*Pouder*s and *Elektuaries*.

Take the *Roots*, but rather the *Buds* of the male *Fernbrake* scarce sprong out of the *Earth*, and dried in a shady place; the *spike* of *Royal Osmond*, of each two drams; *Mace*, *Anni*seeds, of each half a scruple; *Saffron* half a grain: make a *Pouder*. The dose from half a scruple to a scruple, in *Milk*, or *Posset drink*, some *Decoction*, *Broth* or *Panadaes*.

Take the medulous part of the *Root* of *Sarsaperilla* two drams; the *Roots* of *China* one dram; the *Root* of *Sassafras* one scruple; the seeds of *Caraway* and *Coriander* of each half a scruple; the *Roots* of the male *Fernbrake*, *Osmond royal*, of each two scruples: Mingle them and make a *Pouder* to be used as the former.

Take *Wood-lice*, or as some Countries cal them, *Sows* washed, first in *water*, and then in *white-wine*, afterwards calcined in a *Crucible*; *Bread* dried as much as you pleas: make them into a *Pouder*. The dose is from half a scruple to a scruple, either in *Broth*, or any thing

elf: In the same manner you may if you pleas prepare the *Livers* either of *Frogs* or *yong Ravens*: We gave you the manner before.

Take of *Flower of Brimstone* two drams; *Diarrhodon Abbatis*, *Diatrion santalon*, of each half a scruple; *Saffron* half a grain; *refined Sugar* three ounces: All of them being made into very fine Powder, make them into a Past with a sufficient quantity of *Rose water*: Dry them, and when you pleas you may beat them into Powder, and give a dram of them at a time.

Take *Conserv of Red Roses* one ounce and an half; *Conserv of the flowers of Borage*, *Archangel*, *Sage*, *Rosemary*, of each half an ounce; *Steel prepared* one dram; *Cinnamon*, *Spanish Liquoris*, of each half a dram; *Saffron* half a scruple; *Red Sanders* a scruple: beat such things (as are reducible) to powder; make an *Electuary* according to art, with *syrup of Succory with Rhubarb* a sufficient quantity. Let the Sick take half a dram, two scruples or a dram every morning, either by it self, or in a spoonful of *Possiet-Ale*, or som appropriated *Syrup*, or else in *wine*.

Take *Conserv of Archangel flowers* one ounce; the *flowers of Sage*, *Clove-Gilliflowers*, *Rosemary-flowers*, *Myrobalans candied in India*, *Citron Pills candied*, of each half an ounce; *red Sanders*, *Cinnamon*, *Spanish Liquoris*, of each half a dram; *Salt of Steel*, or elf *Saffron*, half a scruple; with a sufficient quantity of *syrup of Wormwood*, make your *Electuary*. The dose and manner of using it is the same with the former.



C H A P. XXXIV.

Remedies that correct the Symptoms.

SOME Symptoms supervening upon this Affect, do sometimes anticipate the legitimate Method of Cure, and require a particular manner of proceeding. Of this sort are the flux of the Belly, the Lask, wherewith somewhat of a Lientery is frequently joyned; profuse Sweats, laborious and painful breeding Teeth, and the Toothach.

The flux of the Belly doth very much follow this Affect; which if it persevere for any long time, it is either very violent, and easily watereth the Spirits, consumeth the solid parts, manifestly puts on the nature of a caus, and as a caus indicates its own correction. A Bloody-flux rarely hapneth with this Disease. But a Lask with exulcerations in the Guts, or complicated with a Lientery is very useful. For in respect of the debility to the parts subservient to digestion, a Lask, or a Lientery may easily supervene, but not a Bloudy-flux. Yet there is a frequent concurrence of other causes; as of the indigested nourishment vicious either in quantity or quality; som feaver, watchings, worms, painful breeding Teeth, &c. al which things do likewise easily occasion a Lask, or Lientery rather than a Bloudy-flux. As for the Cure, it is partly perfected by Purgations, partly by astringent Remedies; partly by such as open, and partly by such as strengthen the parts.

These Purgers are most proper which leave behind an evident binding after evacuation ; as *Rhubarb*, *Senna*, *Tamarinds*, *Myrobalans*, &c. out of which for the most part we frame a *Bolus* or *Potions*, becauf they are most easily swallowed under those forms. As,

Take *Conserv of Red Roses* half an ounce ; *Rhubarb in Powder* twelve grains ; with a sufficient quantity of *syrup of Coral* make a *Bolus* to be given in the morning.

Take of the *Pulp of Tamarinds* one dram ; *Rhubarb in Powder* seven grains ; *Sugar of Roses* half a dram, with a sufficient quantity of *syrup of Quinces*, make your *Bolus*. Instead of this *Syrup* you may use *syrup of Coral*, or *syrup of Mint*, or *syrup of Myrtilles*, or *syrup of Pomegranats*.

Take *Senna* half a dram ; *Rhubarb* one scruple ; *Tamarinds* a dram and an half ; *Anniseeds bruised* ten grains : Infuse them in a sufficient quantity of *fountain water* : boyl them very gently : and to an ounce and an half of the *Decoction*, ad *syrup of dried Roses* half an ounce : mingle them together for a *Potion*.

Take *Plantain* or *Succory water*, or *Saxifrage water*, one ounce ; *Rhubarb in powder* ten grains ; *syrup. Augustan.* *syrup of dried Roses* of each two drams : Mingle them and make your *Potion*.

It must be observed, That a more full evacuation is sometimes requisite, namely, when the flux hath not been immoderat, or of long continuance, and in the mean time the matter offending hath bin copiously collected in the Body. In which case, in lieu of the *Syrup of dried Roses*, you may take som drams of *syrup of Roses solutive*, *syr. Augustan.* or of *Succory with Rhubarb* or *Manna* : But commonly the safest way is, to augment the dose of *Rhubarb*, or ell of *Senna*, not omitting the *syrup of dried Roses*.

In

In the evening after the Purgation, you may administer ten grains of *Diascordium* boyled in *wine*, with *Cloves*, and a little *Cinnamon*, and mixed with a third part of *Erratick Poppy water*, and some cordial Syrup, as Syrup of Clove-Gilliflowers to strengthen the Spirits and to stay the Flux; or if the Flux be stubborn, you may mingle two drams of *Diacodium* for a dose instead of the Syrup aforesaid. Or

Take of Posset-drink made with white-Wine, the Curd being taken off (aromatize it with a little *Saffron* tied up in a rag, crushing it gently between your Fingers) *Confectio Alkermes* one scruple; Pomgranat Pills in powder seven grains; *Diacodium* two drams: mix them together to be taken when the Child is minded to sleep. Or

Take *Laudanum* according to the *London Dispensatory*, half a grain; *Magister*. of Coral twelve grains; Conserve of Clove-Gilliflowers, or Red Roses, one scruple, with a sufficient quantity of Syrup of Quinces, make a *Bolus* to be taken at bed-time.

If there be obstructions, you may prescribe *Crocus Martis*, or Salt of Steel, to be taken in the morning. As,

Take Conserve of Roses one ounce: the Roots of Succory preserved, Myrobalans preserved in *India*, of each half an ounce: Salt of Steel half a scruple, or *Crocus Martis* one scruple: Cinnamon, Liquoris, red Coral, of each eighteen grains: Saffron a grain and a half: Syrup of Succory without Rhubarb a sufficient quantity: make your Electuary according to art, whereof let the Child take half a dram each morning. Red hot Iron may be quenched to the same purpose in its ordinary drink.

If the Child be troubled with a violent flux, you may give it som binding Conserve, imagin Conserve of Sloes, and mix it with such things as the Child delights to eat, but in so doing be sure you please its Palat.

Sometimes a profuse and excessive sweating find a peculiar business for the Physitian in this affect : for it very much wasts the Spirits and retards the cure of the disease.

Yet caution must be used not to restrain it rashly, if perhaps there be a Fever, or if any feaverish fit, or immoderat heat hath gon before : For in these cases it may be upon a critical time, or at least it may bring more advantage to the Body by the mitigation of the Fever, than damage by the loss of the Spirits. For we know not whether any thing doth more potently or indeed more sweetly expel the feaverish heat thā sweating.

In the interim when it floweth inordinately and causelessly, it argueth that the Body is oppressed with obstructions, with crude juyces and unprofitable superfluities, which whilst Nature striveth to master, and to subdu, by that very labor, (the openness of the pores withal concurring) it is evaporated by sweat, and indeed an unprofitable one, very laborious and such as wasteth the Spirits, which therefore as soon as possible must be corrected. This Hippocrates meant, where he adviseth, *That that sweat which floweth away without cause, requireth purgation.* For what can more commodiously diminish and dissipate these superfluities ? Again, this motion is contrary to sweating, wherefore it meriteth the preheminance among the remedies opposed to this Sympton, and seeing that it clears the way for Medicines aperient, and such as strengthen the skin, and move forward concoction, (which perfect the last part of the cure) it ought in al right to be premised before them.

Purgative Medicines hitherto belonging, are those that are observed to be friendly, and agreeable to Nature, and withal such as open obstructions, and strengthen the Bowels: al which things whither any Simple can perform so wel as Rubarb, we very much doubt. Yet al those Siml and Compound Medicaments proposed above in the Chapter of Remedies Electively evacuant, may, according to the Condition of the Patient, and the Prudence of the Physitian, be transplanted hither. Som very much commend Beer in this case medicated with Rubarb.

Take Rubarb cut into any smal peeces, two Drams; Raisins stoned and slit, one ounce; smal Bear, two pound; put them into a Glaß or stone flagon stopd with the best Cork; set it in a very cold place, and stir it very often, but before you use it let it settle again, a whol day, then draw out the liquor for your ordinary drink. When the flagon is empty fil it again with beer but put not in a new quantity of Rhubarb.

Moreover, The most noble Aperients which both help concoction, and repress unprofitable sweating, are French Wine, and Rhennish Wine. But if there be any fear of their heat in this tender age, they may be tempered with roasted Apples, Borage, or red Rose-water, adding a little Sugar and grated Nutmeg, let them be also taken in a lesser quantity and only at meals.

They are likewise the most effectual Aperients, which do not only help concoction, but also strengthen the Tone of al the parts, especially of the Bowels. Among which we chiefly commend things made with steel, as wine made with steel, and the Electuary before named, and the like. Now although steel doth indeed effectually perform those things which we have said; yet because it doth not in all respects answer to som other scopes of

great moment in this affect, but doth more hurt sometimes in one particular, than it doth good in another ; we thought it expedient to subjoyn these following Cautions concerning the use therof.

• First, Seing that Steel is an enemy to the Lungs, and doth easily stir a cruel flux of flegmatick matter in tender Bodies, therefore you must totally abstain from the use therof, where there is any Cathar, Cough, obstruction of the Lungs, and much more, if there be any Inflammation, Pleurisie, Blood-spitting, or a proneness of disposition to any of these affects.

Secondly, Becaus Steel contributes little or nothing to the operation of the Blood : but on the contrary (however it may attenuat the tough and flegmatick part thereof) doth rather expedit the separation therof from the other mass of Blood by reason of the tart quality that is predominant in it, it cannot be admitted but with circumspection, especially that inequality of the Blood being so importunat and urgent.

Thirdly, Seing that the attenuating, cutting and opening faculty in Steel is conjoyned with an apparent and extream driness and binding, and therefore perhaps doth more compact those humors, than dissolve and scatter them ; the use therof ought to be refrained, at least suspected in any considerable *Alogotrophy* of the parts. For the fear is lest it should bind too close and consolidate the short parts of the Bones & those that are too scantily nourished ; wherby afterwards they may become less prompt and apt to grow in length : but the parts sticking out (as also the convex sides of the Bones) which are liberally nourished it cannot dissolve, and then there may be a jealousy that it will too much confirm them and make them stubborn ; namely by an extream thickning and hardning of them.

Fourthly,

Fourthly, In all acute Feavers the use of Steel is hurtful, because it over-dryeth and bindeth the Parts, yea, for that very regard that it restraineth Sweating, and makes the humors more fierce and sharp.

These Cautions being rightly observed, we admit the use of Steel in this Affect, but because Mountebanks and Quacks cannot distinguish between the use and the abuse, we would not perswade any to make tryal of this noble Medicine without the advise and counsel of some prudent and knowing Physitian, because if it be not circumspectly administred, the danger is very great. Some other Aperients of less note may serve this scope; as the Roots of Succory or Borrage, or Conserve of their Flowers; the Roots of Grass, Sparagus, Fernbrake, Madder; the Leaves of Ceterach, Spleenwort, Maidenhair, &c. Among the Compounds Species, *Diarr. Santal. Diarrhod. abbat. &c.* Or

Take of the best Sugar three ounces, dissolve it in Rose Water and boyl it a little beyond the consistence of a Syrup, then ad Conserv of Barberies one ounce; *Diatri. Santal. and Diarrhod. Abbat.* of each one dram; pouders of Saffron, one grain; mingle them and make your Electuary.

The painful breeding and the aching of the Teeth are the familiar Symptoms of the Rachites; and because they breed Feavers, unquietness, watchings, and other evils, they also deserve a peculiar mitigation; if the Tooth therefore as it is working through the Gum puts the Child to very much pain, you must without delay (unless it were done before) appoint some universal evacuation: as a Vomit, which is thought to be potent remedy against the Toothach. Now that may be moved by the only tickling of the Throat, putting
in

in a Feather, or the Nurses Finger into the Childs mouth; or else with rubbing the Tooth that is breaking forth with a Tobacco Leaf wrapped about the Nurses Finger, and a little moistned with Beer; or lastly, by giving some vomiting draught above described. But this remedy is forbidden reiteration in regard that it too much may weaken the Stomach. The day following (the pain persisting or returning) some Cathartick Potion or Bolus among those above reherfed, or like unto those must be administred. After this universal Evacuation you must descend to Topical Remedies. Nurses are wont to rub the Gums with Corral polished for that purpose. But the Physitians do rather commend the Root of Marsh Mallows, which do mollifie and loosen the Gums that they may obtain the more easie passage. Others report it for a great secret to rub the aching Tooth with the Root of the sharpest Sorrel. Others very much commend the rubbing of that Gum where the Tooth is coming out with a Cocks Comb newley cut off, or with the hot Blood distilling from that Wound. We have had no experience of those things which they use to instill into the Ears; in like manner, neither the Plaisters of Mastich, Olibanum, or red Lead, which in those of full growth are observed to stop the Rhewm. Others apply small Epispastick Plaisters behind the Ears, which perhaps compel back the matter that breeds the pain in the Teeth. But neither do we interpose our judgment concerning these things. Only when Universals are unavailable, we have recourse to Hypnotical Remedies, which indeed by outward application profit little, but being taken inwards they are very helpful, especially being rightly prepared and duly corrected. Therefore when want of rest and watchings beget molestation, thus we proceed.

Take

Take Diascordium seven grains ; *Syr. de Meconio*, one dram and an half, or two drams ; Posset Drink made of Milk and white Wine, with a little Saffron, one ounce, or ten drams ; mingle them and give it at Bed-time the next night following after the Purgation.

Take Ladanum, according to the London Dispensatory, half a grain ; the Cordial Pouder of the Claws of Crabs ten grains ; Conserve of Clove-gilliflowers, one scruple ; with a sufficient quantity of Syrup of Balm make a Bolus to be swallowed in the evening at sleeping time. Thus much of such things as correct the Symptom.



CHAP. XXX V.

External Remedies.

Having finished the Disquisition of the matter
 and kinds of internal Remedies, we shall
 now direct our Discours to external Remedies. Which indeed we have reserved for the last place, not becaus they must perpetually be last put in execution, but becaus they are altogether of a different kind from the internal : now Universals are to be administred immediately after Evacuants, or at least after those that are electively Purgant, and withal with the Specificall Alterants, unto which kind they belong, although indeed as they are external, they differ from them. Now we desire that we may here be understood by external Remedies to signifie and intend every kind
 of

of Medicament which cannot properly be referred to Chyrurgery, or those things that are inwardly taken, provided that they have their use in the Cure of this Affect.

Therefore we divide it into two Kinds, namely, The manner of Exercise, and things externally Applicable.

The Manner, or Kinds of Exercise.

All kinds of Exercise, unto which Children are accustomed, may be useful in their time and season. But because Children who are molested with the *Rachites* are somewhat averse from motion and by reason of their weakness of Spirit, and unaccustomedness of Exercise do scarce after the beginning of the cure, or indeed not at all endure violent motions; therefore they must begin perpetually with gentle Exercises, and afterwards proceed by degrees to stronger; in like manner at first they must continue but a short time, but afterwards a longer space without any intermission.

We therefore distinguish Exercises into gentle, and vehement or Masculine. The gentle we refer first to the manner of lying down. Secondly, To the agitation of the Body in the Cradle. Thirdly, To the carrying them about in the Nurses Arms. Fourthly, To sedentary pastimes.

First, Lying upon the Back among all the postures of the Body doth chiefly recede from Exercise, and is almost only allowable in the extream weakness of the Spirits, as in acute Feavers when the Spirits are spent, likewise in many cases of the Chest and Hypochondriacal parts, as frequently in an inflammation of the Liver, Spleen, Lungues, in a Pleurisie, in the growing of the Lungues with the Pleura, and an Emposthume, &c.

The

The lying upon one side either right or left cometh neereſt to the Supine Poſition, and participates very little of the Nature of Exerciſe. Wherefore it is alſo allowable in any great weakneſs of the Spirits, at leaſt in regard of altering the poſture of the Body, as alſo when a profound ſleep is not expected. Moreover, it is ſomewhat profitable to ſtrong Bodies in the time of the firſt or ſecond ſleep, after juſt internals ſtill changing ſides. But afterwards perhaps it is not ſo agreeable unto, nor beneficial for them, eſpecially when the Body is fully reſreſhed with ſleep. For then that poſture is beſt which draweth neereſt to the Nature of Exerciſe.

The Simple Lateral Poſition containeth ſomewhat more of Exerciſe, and is inconvenient for weak Bodies and ſuch as are not uſed to it in the time of profound ſleep : but otherwiſe it may be made familiar, if for a while they will accuſtom themſelves unto it. It is at all times good for ſtrong Bodies, provided that a due care be had to alter and vary it.

The lying on one ſide towards the Belly is laborious and troubleſom, and not to be continued long by ſtrong and robuſtious Bodies that are not uſed to it. But the moleſtation being overcome by cuſtom, it is more eaſily tolerated : and becauſe it eaſeth the pains in the Head, helpeth the Concoction of the Stomach, mitigateth the pains of the Chollick, and looſneth a coſtive Body, it may be ſometimes uſeful when Nature is thoroughly ſatisfied with ſleep, and in this affect it may ſupply the place of Exerciſe. For it ſometimes hapneth in this Diſeaſe, that Children for ſome time are not without diſadvantage truſted to their own Feet, yea many times they gain more by reſt than walking up and down. For walking rather confirmeth than cureth the
bended

bended Joynts; but lying down, when the parts are well swathed, conduceth not a little to their erection. Then again, lying down helpeth very much to stretch and lengthen the short parts, as may be perceived by the growth of the parts in length after a Disease. Thirdly, Lying down, in regard of the common Coverings of the whol Body, advanceth an equal disperſion of the heat through all the parts. Laſtly, lying down, if you obſerve a right way of placing and making the Bed, may contribute very much to correct the crookning of the Back-bone and the whol Body, for when they lie upon the gibbous and bunched Side, a little bag made for the ſame purpoſe may be laid under the parts ſticking out, and ſo made fit that the gibbous parts may in a manner ſuſtain the weight of the whol Body, and ſo they may be compelled as it were to ſtraightneſs. But when Children roul to the other ſide, the bed ſhould be ſo made, that if the little Pillow or Bay be taken away the hollow part ſhould ſcarce touch the bed unleſs he conform himſelf to a ſtraight line, that by his weight it may be depreſſed to a ſtraightneſs.

Secondly, That kind of exerciſe which is performed *by the rocking of the Cradle ſomewhat emulates this lying down.* The Cradles are ſuſtained upon two Arches, or two parts of a Circle: now the more they have of a Circle, the more effectually they exerciſe the Infant. This motion in time of ſleep muſt be intermitted, or at leaſt remitted; but whiſt the Child waketh it muſt be ſometimes intended, and ſometimes remitted. It is moſt profitable for weak Infants that can ſcarce ſtand upon their Feet, or are otherwiſe hindred from waking.

Thirdly, *The bearing them about in the Nurſes Arms is almoſt agreeable to the ſame Children, and under the ſame conditions:* in like manner the rejoicing
of

of the Child whilst the Nurse singeth ; either as it sits in her Lap , or is held up in her Hands, as also the tossing of it up and down, and waving of it to and fro, and if the Child be strong by holding it gently up by the Hands, if it be weak, under the Arms, yet so that the Thighs and the whole Body may hang down. Also the drawing of the Children backward and forward upon a Bed or a Table between two Nurses, the one holding it by a Hand, the other by a Foot. The two last motions seem to contribute somewhat to the erection of the crooked or bended Back-bone, especially if the Hand which is laid upon the depressed Shoulder, and the Foot which is belonging to the elevated Hip be drawn with more strength and vehemence than the other hand or foot. To the same end also tendeth the lifting up of the Child, taking him by his Feet only, so that the trunk of his Body and his Head may for a time hang down in an inverted posture ; although indeed this action may also seem in some manner to relate unto the growing to of the Liver, if any such at that time be : as also that convulsion of the Body, whereby the Head being lowermost the Feet are lifted up ; and then again the Head being lifted up the whole Body is inverted. Hitherto also may be referred that rolling of the Child, which some use, upon a Bed or Table, the Body being laterally declined : which we more approve if it be not rolled quite round about, but only backwards and forwards, laying a little hard Cushion underneath, wheron the gibbous part may rest, & sustain the weight of the Body. This exercise being rightly practised doth help much to straighten the Body.

Fourthly, *Sedentary Games and pastimes* are the least profitable among all exercises for Children that have the *Rachites*, and indeed they are only allowable to still
and

and quiet them. But the more beneficial will be to tempt them to a frequent use of their Feet by playing some little Ball or Cat before them that they may be often kicking them. But if the Body of the Child be crooked, such sports must be invented as may allure him to move his Body to the contrary side. When therefore one Shoulder is higher than another hold up som Gewgaw or Rattle before the Child that he may stretch out the Hand belonging to the lowest Shoulder to reach after the offered object. But a thousand such like inventions may be found out, and we leave them to the Nurses industry.

The Masculine Exercises of greater note we reduce to these three Titles.

- 1 To Going. 2 To an Artificial hanging of the Body. 3 To Friction, rubbing, and contrectation of the Hypochondries and the Abdomen.

First, *Ostentation* or *waking* may be numbred amongst the more noble Exercises. For Children that are big and strong, and used to run up and down every day, do by walking and stirring about, the more easily rid away this Diseas. But this kind of Exercise must be refused unto them whose Joynts are not knit and confirmed, and whose Ankles, Knees & Back are so weak that they cannot sustain the Body. For when Children by the negligence of their Nurses are too soon committed to their Feet, it easily coms to pass, that they suffer those Joynts to be bended either inwards or outwards, backwards or forwards, and consequently they are the occasion of that deformity which befalleth the Bodies of most men and women. Moreover, those Children which have already contracted such a bending in their joynts, either by the natural weakness and loosness of the Ligaments, or by the bad usage or indiligence of their

their Nurses, must be trusted to exercise their Legs, till some splents or other instruments be provided, which may be able to erect the bended Joynts and to keep them in an erected posture. The driving of Children up and down in their Coaches or Chariots is much to the same purpose, provided that they be so contrived that there be no danger of stumbling or overthrowing.

Secondly, The artificial suspension of the Body is performed by the help of an Instrument cunningly made with swathing Bands, first crossing the Breast and coming under the Armpits, then about the Head and under the Chin, and then receiving the hands by two handles, so that it is a pleasure to see the Child hanging pendulous in the Air, and moved to and fro by the Spectators. This kind of Exercise is thought to be many waies conducible in this Affect, for it helpeth to restore the crooked Bones, to erect the bended Joynts, and to lengthen the short Stature of the Body. Moreover, it exciteth the vital Heat, and withal allureth a plentiful distribution of the Nourishment to the external and first affected parts: and in the mean time it is rather a pleasure than a trouble to the Child. Some that the parts may the more be stretched, hang Leaden Shooes upon the Feet, and fasten weights to the Body, that the parts may the more easily be extended to an equal length. But this exercise is only proper for those that are strong.

Thirdly, Friction or rubbing may in some manner be likewise referred to Masculine Exercises: not indeed in respect of any active motion in the Child requisite to the administration therof (for it is performed by an action of the Nurse rather than of the Child) but in respect of a like force and efficacy which it hath in the curing of this Affect. Now Friction seemeth to be

twofold, as partly belonging to the kind of Exercise, and partly to thole things which are outwardly to be applied, for which caus we have reserved it unto this place, that it might be the last in the number of the Exercises, and immediately precede the external applications. This must be done (at least in the Winter time) by a warm site, the Child being in all respects well fortified from the injuries of the weather, and the violences of the cold Ayr. Some Nurses administer this Friction with a hot hand, others with Linnen Cloathes dried and heated; others with woollen Cloathes; and others again with a little Brush, and indeed some do most commend the Brush, and prefer it before the other waies, but becaus there seemeth to be so little difference in all the waies, we approve them all, and leave the choice to the Nurses wisdom. But let them begin this Friction at the Back Bone, the Child being laid upon his Belly, and let them stir their Hands now upwards, now downwards, now on each side, then to the Thighs, Hips, Legs, Ankles, the Soals of the Feet, and all the parts of the Body, those excepted where there is a sticking out of the Bones, and there let them rub the hollow part of them. This action must not be continued beyond a moderate ruddiness raised in the parts, lest the Natural heat should be scattered, rather than cherished. This kind of exercise is most agreeable to weak Children; and such as are scarce able to stand or go. For it supplieth the defect of running up and down, exciteth the Natural heat, summoneth the Vital, and attracteth the Nourishment to the affected parts. Yet we grant that Friction doth not so powerfully summon the heat and nourishment to the Flesh of the Muicles, although perhaps it doth more to the Skin, as exercise doth properly so called, and consequently that it must yield

yield in dignity and nature to true exercises. To Friction also belongeth that contrectation of the Belly, or of the Abdomen and the Hypochondries, sometimes lifting up the Bowels, sometimes depressing them, sometimes removing them towards the right, sometimes towards the left hand, and sometimes thrusting in the tops of the Fingers under the Bastard Ribs. And Physitians hope, and not without reason, that by this action they may deliver the Liver from any preternatural growing with the *Peritoneum*, if any such should chance to be. And here we note by the way that such growing of that Bowel may easily happen in this affect by reason of the greatness of the Liver and the stretching of the Hypochondriacal parts, wherupon the *Peritoneum* and the Membrane of the Liver are are most neerly and strictly conjoynded, and being conjoynded may remain long in the same Position, and so by the help of time they may easily grow together. This growing together in as much as it dependeth (as we have said) upon the stretching of the Hypochondries, and the bigness of the Liver, it may not incongruously be referred to the secondary Essence of this Disease, namely, to the organical parts viciated, among which it deserves to be reckoned, although above we chanced to omit it in its proper place, and therefore we thought good to mention it here. Thus much of Exercises, now follow the External Applications.



CHAP. XXXVI.

Things to be Externally Applied.

These remedies (as we have said) do not only
They are administered with a gentle Friction.
 Now they are either General, or Universal,
 respecting all parts alike, or Particular, and dedicated to
 certain Regions of the Body. The matter of the Uni-
 versals is almost the same with that which we have pro-
 pounded above in the Chapter of *Specificall Alterant*
Remedies: but the matter of the particulars must be dis-
 tinguished according to the variety of the Regions of
 the Body unto which they are applied. The forms of
 either kind seem to be common, and they are five in
 number, Liquors, Oyls, Liniments, Ointments,
 Playsters: although Plaisters are dedicated rather to
 certain parts, and never are at once applied to the whole
 Body.

Liquors that have been commended by long experi-
 ence in this Affect are almost all kinds of Wine; but
 especially Muskadine. But some do prefer the Prussian
 Beer, which indeed may help much to strengthen and
 consolidate the Parts, but very little or nothing at all to
 effect the equation of the Blood, or an equal distributi-
 on of it. The same judgment is also to be made of A-
 ligant, as also of red Wine. Some instead of Wine
 use ordinary *Aqua vite*, which is beleev'd to be no-
 thing

thing inferior to Wine, Decoctions also may be prepared for the same use. As,

Take the Roots of Royal Osmond, the Leaves of Sage, the Flowers of Marigolds, the Leaves of Bay-tree, Pauls Betony, Hartstongue, of each half 'an handful; Rosemary, red Roses dried, of each one pugil; boyl them in Fountain Water, and ordinary Aqua vitæ, of each a pound, to the consumption of the third part; strain it and keep for your use. Or

Take the roots of the male Fernbrake one ounce, the leaves of royal Osmond, Clary, Bay tree, Sage, Pauls Betony, of each half a handful, infuse them in some Wine, and keep the strained liquor for your use.

But these Liquors are seldom or never administred alone, but must be mixt with equal parts of Oyls, Liniments, or Ointments; and indeed they must be used before a warm fire, and rubbed on with a hot hand til they be dry.

Compound Oyls such as are approved in this Affect are very few, and those ineffectual: but there are many Simple Oyls, as Oyl of Earth-worms, Chamamile, Marygold flowers, Pauls Betony, Neats-foot Oyl, unto which you may also ad Oyl of Foxes, Oyl of Whelps, Oyl of Swallows, provided that these last be prepared Simply by themselves without any commixture of extreme hot ingredients.

Oyl of Exeter, although some Practitioners use it, and though it be a little hotter then is fit to be uled alone to so tender an age as is troubled with this Diseaf, and so are other things which are vulgarly used, as Oyl of Castoreum, or Jacobi de Manlius, and ung. Antiparalyticis, and other Ointments, as, de Nervino, Martiato, Aregon, and the like. And the reason is, because such a numness afflicts not these as it doth such as are Paralytical, nor

the same Defect of Vital Spirits, nor the same unequal distribution of nourishment. But because this is a new Disease, if any desire Oyls, Ointments, or Liniments proper to the Evil, let him make use of a right Method, an able Physitian, a specifical way either of Oyls or Ointments as we shall shew you by these examples :

Take the leaves of red Sage, Betony, Pimpernel, Marygold flowers, of each two handfuls : the roots of royal Osmund six ounces, May Butter three pound, white Wine half a pound : cut the Herbs, bruise the Roots, and boil them according to art til the Wine be consumed : Afterwards strain them being yet hot, and put to them oyl of Nutmegs drawn by expression one ounce and an half, mingl them diligently, and after setling, casting away the dregs, make your Ointment, which you may reserve in a glass Vessel for your use. Or,

Take the leaves of Brooklime, Chamomile, Watercresses, garden Scurvygrass, Pauls Betony, Motherwort, Maiden-hair, Hartstongue, Ceterach, Bayleaves, the tops of Mint, red Sage, Rosemary, Ivy-berries, of each half a handful: the Roots of royal Osmund four ounces, Muscadale half a pound, May Butuer three pound : cut the Leaves, bruise the Berries, and boil them all to the consumption of the Wine, strain it whilst it is hot, and seperating the pure substance from the settlings, make an Ointment according to art. Or,

Take the leavs of red Sage, Pauls Betony, Hartstongue, stinking Gladdon, of each two handfuls : the roots of royal Osmund six ounces : the tops of Lavender, Rosemary, Bay-leaves, of each a handful : common Aquæ vitæ, one pound : Oyl of Neats-foot, and Foxes, of each half a pound : Deers-suet, or the suet of an Ox, Oyl of Worms, of each one pound, boil them to the consumption of the Aquæ vitæ : strain out the Ointment whilst it is hot, and making

making a separation of the dregs, keep it for your use.

Fourthly, Take the green leaves of royal Osmond, six handfuls: Pimpernels, Morigold-flowrs, the leaves of red Sage, Clary, Mother-wort, Brook-lime, Watercresses, of each a handful: the leaves of Rosemary, Bay, of each half a handful: chop them together very smal, and beat them diligently in a Marble or Wooden Morter, with a wooden Pestle, with six pound of unsalted Butter, and so let them stand fourteen days, then melt them gently in a Bath, and as soon as they begin to be hot, strain them, and then put in a new quantity of Herbs as before: at length strain and purify your Ointment, and keep it for occasions.

To these general external Remedies som particular ones relating to som certain parts of the Body may be sub-joynd: as if the region of the *Abdomen*, especially the *Hypocondria*, be stretched, hard and swelled, and this stretching hardness, and swelling would not yeild to a Purgation though rightly administred, then you must proceed to Local Remedies: As,

Take Oyl of Capers, Wormwood, Elder, of each one ounce: of the general Ointment first described, one ounce and an half: mingle them and make a Liniment.

Or,

Take Ointment of the opening juyces *Foetus* three ounces, the first general Ointment two ounces, mix them together and make them one Ointment: also Oyl of Saxifrage made of a manifold infusion, and boiling of the bruised Herb in common Oyl is much to be commended to be mixed with it.

In the time of using it, this and the like Liniments or Unguents may be mingled for penetration sake with som appropriat liquor: As,

Bb 4

Take

Take the flowers of Elder, the flowers of red Sage, Bay-berries bruised, white Sanders slightly beaten to powder, of each two drams, white Wine two pound, steep them for three days in a cold place in a glass vessel accurately stoppt with Cork, and shake it twice a day: when you use it, strain as much as will serve your present occasion, then stop your vessel again. Or, if you desire a stronger,

Take the roots of white Bryony well dried and sliced, Bay-berries, Goof-dung, of each two drams: Cummin-seeds one dram: the leaves of red Sage, the flowers of Elder, of each one pugil; boil them in one pound and a half of Rhenish-wine to a pound: keep the Decoction in a cold place diligently stopped.

These and the like Liquors mingled with the Oyntment, and heated at the fire, must be rubbed upon the Abdomen, and especially the Hypochondries, even to driness. Let the Nurse also having well warmed her hands, handle those parts gently, sometimes pressing the Bowels upwards, sometimes downwards, sometimes to the right hand, and sometimes to the left, according to our former Directions.

The most galent thing of all is the Balsom of Tolu mixed with any Oyntment or Plaister, and so applied to the Region of the Back either in form of an Oyntment or Playster.

Plaisters also seem to contribute something. As Take three ounces of Ceratum santalinum; Gum Ammoniacum dissolved in Rhennish wine, or in som other medicated wine above described, purified and boyled again to a thicknes, one ounce: make your Plaister according to art. Spread part of this upon Leather and lay it upon the right Hypochondry, or els the left, if the hardness be there most sensible, which indeed is very seldom. Or

Take

Take the Juyces of Brooklime, watercresses, Garden-Scurvygrass, wormwood, the bark of Elder, the roots of the male Fernbrake, of each one ounce : Let the Juyces be purified with a gentle heat, and being extracted reduce them to a thick body, then ad one dram & an half of Mace, and two drams of yellow Sanders in powder.

Take of this Mixture one ounce and an half : Gum Ammoniac. dissolved in wine and boyled to a body four ounces. Mingle them hot, and stir them continually till they begin to wax cool and hard, and make a Plaister to be applied as the former.

Moreover, when the Lungs are il affected many times a peculiar pectoral Plaister is very useful. As

Take Oyl of Violets, white Lillies, and the Ointment of Orange flowers, of each one ounce : Mingle them and make a Liniment to be rubbed with a hot hand upon the Breast, laying a Lawn Paper over it lined with Wool or linen cloth. To this Liniment you may ad a smal quantity of Natural Balsom. Or

Take two ounces Unguent. Pectorale ; an ounce and an half of simple Ointment of Liquoris : one ounce of Oyl of Violets. Mingle them and make a Liniment to be used after the same manner.

The Ointment of Liquoris is thus made.

Take new and Juicy Liquoris four ounces : new unsalted Butter washt in Rose water one pound : slice the Liquoris and beat it wel with the Butter in a stone Mortar, afterwards fry them, then strain and squeeze them, and repeat the same labor thrice with a new quantity of Liquoris.

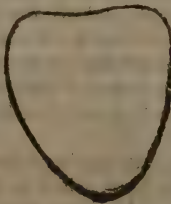
Again, Som Plaisters may be prepared proper against the weaknes of the Back, which very frequently happeneth in this Affect. In the Shops you may have the Plaister of Betony, and Diachalcitheos, unto which nevertheless

vertheless when you use them, you must ad *Mastich* and *Olibanum* in powder of each half a dram: the Plaister also which is called *Flos unguentum* may hither be referred, provided that you omit the *Camphire*, in like manner also *Emplastrum Nervinum*. Or

Take two ounces of the first general Oyntment; five of the Herbs that are contained in that Composition, cut and chopped very smal; Yellow Wax four ounces; the purest Rosin eight ounces: the Oyntment, Rosin, and Wax, being melted ad the Herbs and according to art make a Plaistr. Or

Take fifteen ounces of the third general Oyntment; Litharge of Gold beaten smal and sifted nine ounces; boyl them together continually stirring them to the consistence of a Plaister; then ad Wax, Burgundy Pitch, of each three ounces; Oyl of Nutmegs by expression three drams; Mastich, Olibanum, Mirrh, of each one dram and an half; Costorium half a dram; white Vitriol in powder half an ounce; make your Plaister according to art.

The Practioners in Physick differ in the Figure, and about the Application of these Plaisters. Some chuse a longish and narrow Figure, and apply it according to the length of the Back-bone. Others approve a broadish and almost



triangular Figure, such as you see here, and they extend it downward upon the Loyns, the *Os sacrum*, even to the utmost end therof. But when the lower parts of the Back-bone, as also the Knees and Legs, namely those parts which borrow their Nerves from the lower part of the Spine, are weaker than the Superior, we do not

not judg this latter to be a convenient form ; but when the upper parts of the Back-bone seem to be the weaker, we suppose the former longish form to be the more agreeable.

In like manner some commend a Liniment for the weakness of the Back-bone which consisteth of *Gelly of Harts-horn*, made with such things as strengthen the *Sinews*, adding the *Flowers of Sage*, and the *Roots of our Ladies Seal*. In the time of anointing mingle therewith a little *Oyl of Nutmegs* by expression, or *Oyl of Worms*, or *Mans Graß*. And thus much of external Remedies.



FINIS.





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